The Central & South American Cables Expedition,

1893.

Presented by

The India-Rubber, Gutta Percha and Telegraph Works Company, Limited.

No. 12.

THE

Central & South American Cables Expedition.

1893.

Presented by

The India Rubber, Gutta Percha, and Telegraph Works Company (Limited).

621.36
In2ce

CENTRAL AND SOUTH AMERICAN CABLES, 1893.

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MECHANICAL PARTICULARS OF CABLE.

CENTRAL AND SOUTH AMERICAN CABLES EXPEDITION, 1893.

MECHANICAL DESCRIPTION OF CABLE.

Shore-End No. 1953b.

Core.—Copper 107 lbs. and gutta percha 140 lbs. per N.M., served with tanned jute.

Inner Sheathing.—12 galvanized iron wires, each 0″·203 diameter when galvanized.

Inner Serving.—Jute yarn prepared in compound.

Outer Sheathing.—14 galvanized iron wires, each 0″·300 diameter when galvanized. These wires pickled in compound before being used.

Outer Serving.—2 coats of compounded jute, alternating with 2 coats of compound. Weight dry per N.M. = 15·38 tons. Weight wet in air = 15·528 tons. Weight in sea water = 11·648 tons. Specific gravity = 4·0. Breaking strain = 38·646 tons approximate. Diameter = 2″·060. Circumference = 6″·486. Cubic capacity per N.M. = 140·89 cubic feet.

Heavy Intermediate No. 1952.

Core.—Copper 107 lbs. and gutta percha 140 lbs. per N M., served with tanned jute.

Sheathing.—12 galvanized iron wires, each 0″·252 diameter when galvanized.

Serving.—2 coats of compounded jute, alternating with 3 coats of compound. Weight dry per N.M. = 7·298 tons. Weight wet in air 7·491 tons. Weight in sea water = 5·09 tons. Specific gravity = 3·12. Breaking strain = 17·07 tons approximate. Diameter = 1″·613. Circumference = 5″·068. Cubic capacity per N.M. = 86·382 cubic feet.

Heavy Intermediate No. 1952a.

Similar in every respect to No. 1952, except that in this case the sheathing wires are pickled in compound = 2·72 cwt.

Light Intermediate No. 1951.

Core.—Copper 107 lbs. and gutta percha 140 lbs. per N.M., served with tanned jute.

Sheathing.—12 galvanized iron wires, each 0″·203 diameter when galvanized.

Serving.—2 coats of prepared tape, alternating with 3 coats of compound. Weight dry per N.M.=4·571 tons. Weight wet in air = 4·654 tons. Weight in sea water = 3·317 tons. Specific gravity=3·49. Breaking strain=11·53 tons approximate. Diameter=1″·189. Circumference=3″·737. Cubic capacity per N.M.=46·93 cubic feet.

Light Deep Sea No. 1235.

Core.—Copper 107 lbs. and gutta percha 140 lbs., served with tanned jute.

Sheathing.—12 galvanized steel wires, each 0″·084 diameter when galvanized. Breaking strain of each wire=84 tons per square inch. Each wire compounded and taped.

Serving.—1 coat of prepared tape and 20 hemp cords, alternating with 2 coats of compound. Weight dry per N.M.=1·239 tons. Weight in air=1·372 tons. Weight in sea water=0·687 tons. Breaking strain=6·56 tons. Specific gravity=2·00. Diameter=0″·8656. Circumference=2″·7196. Cubic capacity per N.M.=24·88 cubic feet. Modulus of tension=9·37 N.M. Elongation=3·763 °/₀.

Light Deep Sea No. 1235b.

Core.—Copper 107 lbs. and gutta percha 140 lbs., served with tanned jute.

Sheathing.—12 galvanized steel wires, each 0″·084 diameter when galvanized. Breaking strain of each wire=84 tons per square inch. Each wire compounded and taped.

Serving.—2 coats of prepared tape, alternating with 3 coats of compound. Weight dry per N.M.=1·177 tons. Weight wet in air=1·2174 tons. Weight in sea water=0·670 tons. Breaking strain=6·1 tons. Specific gravity=2·22. Diameter =0″·7893. Circumference=2″·4816. Cubic capacity=20·68 cubic feet. Modulus of tension=9·10 N.M.

DATES OF MANUFACTURE.

ACTUAL LOADING OF CABLE.

LOADING OF "SILVERTOWN" AT GREENHITHE.

CENTRAL AND SOUTH AMERICAN DUPLICATE CABLES EXPEDITION, 1893.

S.S. "SILVERTOWN."

DATES OF MANUFACTURE OF CABLE.

Type.	Factory No.	Section.	Factory Length. N.M.	Coiled in Factory Tank. No.	Date. From	Date. To	
Shore-End	1953B	3B	31·5	11	18.10.92	20.12.92	Original Order.
Heavy Intermediate..	1952	3	25·5	3	8.10.92	28.10.92	
" " ..	1952A	3A	10·0	3	28.10.92	4.11.92	
Light " ..	1951	2	74·5	10	12.9.92	18.10.92	
Light Deep Sea ..	1235	5	416·094	13	4.8.92	17.12.92	
" " " ..	"	6	419·595	5	15.8.92	22.12.92	
" " " ..	"	7	415·621	14	5.8.92	12.12.92	
" " " ..	"	9	401·984	6	5.8.92	12.12.92	
" " " ..	"	10	431·534	7	15.8.92	21.12.92	
" " " ..	"	11	345·819	8	6.8.92	2.12.92	
" " " ..	1235B	11A	50·000	8	5.12.92	15.12.92	
			2622·147				
Shore End	1953B	3C	1·197	4	21.12.92	22.12.92	Supplementary Order.
Total Manufactured			2623·344				

ACTUAL LOADING BY FACTORY MEASUREMENT, ALLOWING FOR SPLICES, &c.

After Tank.

	Type.	Fac. No.	Sec.	Length. N.M.	Weight. Tons.	Distribution.
A^1 top.	S.E.	1953B	pt. 3B	6·000	93·2	B St. Elena, south, S.E.
	H.I.	1952	pt. 3	3·490	26·1	
	L.I.	1951	pt. 2	1·990	9·3	
	L.D.S.	235	pt. 10	64·979	89·2	
	L.D.S.	1235	6	419·570	575·6	
	L.D.S.	1235	11	345·794	474·4	
A^1 bot.	L.D.S.	1235	9	401·961	551·5	

Total 1243·784=1819·3.

Main Tank.

	Type.	Fac. No.	Sec.	Length. N.M.	Weight. Tons.	Distribution.
M^4 top. M^4 bot.	S.E.	1953B	3C	1·197	18·6	G S.S. "Relay."
M^3 top.	S.E.	1953B	pt. 3B	7·000	108·7	C St. Elena, north, S.E.
	H.I.	1952	pt. 3	1·990	14·9	
M^3 bot.	L.I.	1951	pt. 2	0·990	4·6	
M^2 top.	S.E.	1953B	pt. 3B	3·500	54·3	E S. Juan, north, S.E.
	H.I.	1952	pt. 3	9·490	71·1	
M^2 bot.	L.I.	1951	pt. 2	21·990	102·4	
M^1 top.	L.D.S.	1235	pt. 10	260·000	356·7	
	L.D.S.	1235	5	416·067	570·8	
M^1 bot.	L.D.S.	1235	7	415·600	570·2	

Total 1137·824=1872·3.

Fore Tank.

	Type.	Fac. No.	Sec.	Length N.M.	Weight. Tons.	Distribution.
F^4 top.	S.E.	1953B	pt. 3B	7·500	116·4	A Chorrillos S.E
	H.I.	1952	pt. 3	3·490	26·1	
F^4 bot.	L.I.	1951	pt. 2	21·986	102·3	
F^3 top.	S.E.	1953B	pt. 3B	4·000	62·1	F Salina Cruz S.E.
	H.I.	1952	pt. 3	6·990	52·4	
	H.I.	1952A	pt. 3A	5·000	37·4	
	L.I.	1951	pt. 2	5·490	25·5	
F^3 bot.	L.D.S.	1235	pt. 10	106·520	146·2	
F^2 top.	L.I.	1951	pt. 2	21·986	102·3	D San Juan, S. S.E.
	H.I.	1952A	pt. 3A	4·990	37·4	
	S.E.	1953B	pt. 3B	3·500	54·3	
F^2 bot. F^1 top. F^1 bot.	L.D.S.	1235B	11A	49·970	60·4	

Total 241·422=822·8.

Old Cable in Port After Pocket.

			N.M.	Tons.
L.I.	No. 944	pt. Secs. 2B,		
	„ 1178	4A, 9, and 11A	= 2·8013 =	8·6
H.D.S.[b]	„ 1236	pt. Sec. 6	= 2·2643 =	3·2
		Total	= 5·0656 =	11·8

Summary.

S.E.	1953B	32·697 N.M.	=	507·6 tons.
H.I.	1952	25·450 „	=	190·6 „
H.I.	1952A	9·990 „	=	74·8 „
L.I.	1951	74·432 „	=	346·4 „
L.D.S.	1235	2430·491 „	=	3334·6 „
L.D.S.	1235B	49·970 „	=	60·4 „

Total C. & S.A. cable o/b = 2623·030 N.M. = 4514·4 tons.
Total C. & S.A. cable expended for splices, &c., while loading ... ...= 0·314 „ *

Total C. & S.A. Co.'s Cable manufactured = 2623·344 N.M.

C & S.A. Co.'s Cable Expended during Shipment.

H.I.	1952	= 0·050 N.M.
H.I.	1952A	= 0·010 „
L.I.	1951	= 0·068 „
L.D.S.	1235	= 0·156 „
L.D.S.	1235B	= 0·030 „
	Total	= 0·314 N.M.*

LOADING OF S.S. "SILVERTOWN" AT GREENHITHE.

SUNDAY, JANUARY 22ND, 1893.

DISTRIBUTION OF WEIGHT IN SHIP.

	Tons.
Cable in fore tank..	822·8
" " main tank	1872·3
" " after tank	1819·3
" " after pockets (port side)	11·8
Coal in fore hold ..	395·0
" " bunkers ..	690·0
Fresh water in fore fresh water tank	7·0
" " " after " " "	33·0
Spare anchors and ropes ..	10·0
Steward's stores { aft 48 tons; amidships 42 " }	90·0
Boatswain's stores	5·0
Carpenter's "	4·0
Extra chain cable ..	4·0
Cable stores { forward 65 tons; amidships 35 " }	100·0
Cable buoys	9·0
Water in main boilers	80·0
Engine-room stores	6·0
Stores, &c., for the C. and S.A. Tel. Co. (forward)	1·0
" " " " " " " " " (aft)	1·0
	5961·2
Deck machinery, spar deck, boats, &c. ..	183·0
Total..	6144·2

Draught of ship { Forward 26′ 5″; Aft 29′ 9″ } mean=28′ 1″.

LIST OF STAFF, CABLE HANDS, AND CREW.

LIST OF STAFF, CABLE HANDS, AND CREW.

LIST OF STAFF.

1.	Mr.	M. H. Gray,	Engineer-in-Chief.
2.	Capt.	J. E. Hunter, R.N.,	Engineer-in-Charge.
3.	Mr.	F. W. Robinson,	Assistant Engineer.
4.	,,	P. Bates,	,, ,,
5.	,,	S. C. Mote,	,, ,,
6.	,,	H. P. Daley,	Accountant.
7.	,,	T. E. M. Rymer-Jones,	Assistant Accountant.
8.	,,	A. Fletcher,	,, ,,
9.	,,	R. S. Lloyd,	Hydrographer.
10.	,,	C. R. Wylie,	Assistant Hydrographer.
11.	,,	J. Rymer-Jones,	Chief Electrician. (Joined ship at Valparaiso, 13/3/93.)
12.	,,	J. Schneider,	Assistant Electrician.
13.	,,	E. Raymond-Barker,	,, ,,
14.	,,	F. W. Knight,	,, ,, (Joined ship at Valparaiso, 13/3/93.)
15.	,,	J. F. Lumsden,	Assistant Electrician. (Drowned at Salina Cruz, 1/5/93.)
16.	,,	P. C. Willmott-Dixon,	Assistant Electrician.
17.	,,	R. G. Wood,	,, ,,
18.	,,	J. F. Coote,	,, ,,
19.	,,	C. H. L. Cazalet,	Electric Light Engineer.

VISITORS.

20.	Mr.	J. Milne,	For Central and South American Telegraph Company.
21.	,,	H. T. Pescod,	
22.	,,	W. Booth,	
23.	,,	J. H Ray,	
24.	,,	T. N. Beach,	
25.		H. Kingsford,	Representatives of Central and South American Telegraph Company (Joined ship 24/3/93).
26.		H. S. Howard,	

S.S. "SILVERTOWN."

LIST OF CABLE HANDS.

1. D. Smith, General Foreman.
2. W. Tillyer, Assistant Foreman.
3. C. Cakebread, ,, ,,
4. T. Knight, Storekeeper. (Invalided home from Tenerife, 1/2/93.)
5. B. Butcher, Leading Hand.
6. H. Grimes, ,, ,,
7. R. Keys, ,, ,,
8. J. Brissenden, Lamp Trimmer.
9. D. Healey, Carpenter.
10. H. Livingstone, Fitter.
11. C. Brown, ,,
12. J. Miller, Fitter's Mate.
13. F. Young, Blacksmith.
14. C. Cooper, Blackmith's Mate.
15. J. Gowing, Jointer.
16. R. Skinner, Jointer's Mate. (Discharged at Callao to join the S.S. "Relay," 26/5/93.)
17. R. Schwartz, Electric Light Driver.
18. H. Bendy, Cable Hand.
19. J. Dulling, ,,
20. J. Copp, Cable Hand.
21. E. Broome, ,,
22. J. Christian, ,,
23. R. Day (Deal), ,,
24. G. Newton, ,,
25. P. Palmer, ,,
26. A. Day (sen.), ,,
27. W. Garrod, ,,
28. T. Ayres, ,,
29. H. Hall, ,,
30. S. Smith, ,,
31. J. Ellis, ,,
32. A. Day (jun.), ,,
33. M. Coleman, ,,
34. W. Bobbitt, ,,
35. W. Coleman, ,,
36. W. Smith, ,,
37. J. Burgess, ,,
38. G. Armes, ,,
39. A. Armes, ,,
40. W. Armes, Cable Hand. (Drowned at Salina Cruz, 1/5/93.)
41. C. J. Cakebread, Caterer.

PAYING-OUT WATCHES.

Starboard.	D. Smith, General Foreman.	Port.
W. Tillyer.	Over Tank.	C. Cakebread.
B. Butcher.	In ,,	H. Grimes.
J. Dulling.	,, ,,	R. Keys.
A. Day (jun.).	,, ,,	A. Day (sen.).
J. Copp	,, ,,	J. Christian.
R. Day.	,, ,,	E. Broome.
M. Coleman.	,, ,,	W. Bobbitt.
J. Burgess.	,, ,,	G. Armes.
W. Coleman.	,, ,,	W. Smith.
A. Armes.	,, ,,	W. Armes.
T. Ayres.	,, ,,	W. Garrod.
S. Smith.	,, ,,	J. Ellis.
G. Newton.	,, ,,	H. Bendy.
P. Palmer.	Leadsman.	H. Hall.
D. Healey.	Brakes.	F. Young.
H. Livingstone.	Machinery.	C. Brown.
C. Cooper.	,,	J. Miller.
1 A.B.	Messenger.	1 A.B.

J. Brissenden, Lamp Trimmer and Storekeeper.
R. Schwartz, Electric Light Driver.

S.S. "SILVERTOWN."

SOUNDING WATCHES.

D. Smith, General Foreman (day work).
W. Tillyer / C. Cakebread } Foremen, night work (if required).

	No. 1.	No. 2.	No. 3.
In Charge	Capt. J. E. Hunter.	Mr. F. W. Robinson.	Mr. P. Bates.
Assistant	Mr. T. E. Rymer-Jones.	Mr. C. R. Wylie.	Mr. A. Fletcher. / „ S. C. Mote.
Leading Hand	B. Butcher.	H. Grimes.	R. Keys.
Cable Hand	G. Armes.	J. Dulling.	J. Christian.
„	J. Copp.	H. Bendy.	A. Day (jun.).
„	W. Garrod.	H. Hall.	T. Ayres.
Engine Driver	C. Brown.	F. Young.	H. Livingstone.
Lamp Trimmer	J. Brissenden.	—	—

BOATS' CREWS.

Steam-Launch.

Coxswain, H. Grimes.
Driver, H. Livingstone.
Bowman, A. Day (jun.).
Stoker, J. Miller.

White Gig.

Leading Hand,	B. Butcher.
No. 1,	A. Day (sen.).
„ 2,	W. Bobbitt.
„ 3,	M. Coleman.
„ 4,	A. Armes.
„ 5,	W. Smith.

Brown Gig.

Leading Hand,	R. Keys.
No. 1,	H. Bendy.
„ 2,	T. Ayres.
„ 3,	W. Armes.
„ 4,	J. Burgess.
„ 5,	S. Smith.

S.S. "SILVERTOWN."

LIST OF OFFICERS AND CREW.

1. Mr. D. Morton, Captain.
2. „ C. L. May, Chief Officer.
3. „ J. B. Cottier, 2nd „
4. „ B. C. Combe, Navigating Officer, and assistant 2nd Officer.
5. „ J. Ogilvie, 3rd Officer.
6. „ H. A. Cruttwell, Surgeon. (Left ship 21/3/93.)
7. „ F. W. Toms, Assistant Surgeon.
8. H. Williams, Hospital Attendant. (Discharged at Callao 26/5/93.)
9. P. Gasnier, Carpenter.
10. R. Murray, 2nd Carpenter.
11. H. Bradley, Boatswain.
13. 2 Boatswain's Mates.
14. 1 Sailmaker and Storekeeper.
15. 1 Lamp Trimmer.
19. 4 Quartermasters.
42. 23 A.B.'s. (1 A.B. invalided home from Tenerife, 1/2/93.)
43. 1 Boy.
44. 1 Officer's Servant.
45. Mr. James Stoddart, Chief Engineer.
46. „ G. Haig, 2nd Engineer.
47. „ C. Ball, 3rd „
48. Mr. W. Sturton, 4th Engineer
49. Mr. T. Porteus, 5th „
50. J. Smith, Boilermaker.
51. J. Carr, Donkeyman.
52. 1 Storekeeper.
55. 3 Greasers.
64. 9 Firemen.
70. 6 Trimmers.
72. 2 Cleaners. (1 Cleaner discharged and 1 Cleaner engaged at Valparaiso 14/3/93.)
73. 1 Engineer's Steward.
74. 1 Boilermaker's Assistant.
75. 1 Donkeyman's Assistant.
76. Mr. O. Cook, Chief Steward.
77. W. Pascoe, 2nd Steward.
78. A. Patrick, Storekeeper.
80. 2 Bedroom Stewards.
85. 5 Assistant ditto.
86. 1 Pantryman.
87. 1 Assistant ditto.
89. 2 2nd Class Stewards.
90. 1 3rd „ „
91. 1 Captain's Servant.
92. H. Firman, Chief Cook.
93. L. Ladeveze, 2nd „
94. J. H. Youngman, Butcher.
95. C. Meers, Baker.
97. 2 Scullions.

SUMMARY.

Staff	17
Visitors	5
Cable Hands	41
Officers and Crew	97

Total number of persons on board on leaving London = 160

DRUM CO-EFFICIENTS

AND

MILEAGE TABLE.

CENTRAL AND SOUTH AMERICAN DUPLICATE CABLES EXPEDITION, 1893.

S.S. "SILVERTOWN."

CO-EFFICIENTS FOR PAYING-OUT DRUM.

Circumference of Drum $=17' \, 8\frac{7}{32}'' = 17' \cdot 6849$.

Type.	Factory No.	Circumference in inches.	Length of 1 rev.	Revs. per N.M.	Log.
			feet.		
Shore-End	1953B	6·486	18·225	333·984	2·5237257
Heavy Intermediate ..	1952	5·068	18·107	336·164	2·5265507
" " ..	1952A	5·068	18·107	336·164	2·5265507
Light " ..	1951	3·737	17·996	338·236	2·5292192
Light Deep Sea	1235	2·7196	17·9115	339·837	2·5312703
" " "	1235B	2·4816	17·8917	340·213	2·5317513
Light Intermediate ..	944	2·937	17·929	339·493	2·5308310
" " ..	1178	2·949	17·930	339·474	2·5308068
Heavy Deep Sea[b]	1236	2·578	17·8997	340·060	2·5315562
Light Intermediate.. ..	ex S.S. "Relay."	3·920	18·0115	337·951	2·5288535

S.S. "SILVERTOWN."

CO-EFFICIENTS FOR STARBOARD PICKING-UP DRUM.

Circumference of Drum=17′ 9$\frac{7}{8}$″=17′·8229.

Type.	Factory No.	Circumference in inches.	Length of 1 rev.	Revs. per N.M.	Log.
			feet.		
Shore-End	1953B	6·486	18·363	331·474	2·5204497
Heavy Intermediate ..	1952	5·068	18·245	333·621	2·5232534
" "	1952A	5·068	18·245	333·621	2·5232534
Light "	1951	3·737	18·134	335·662	2·5259017
Light Deep Sea	1235	2·7196	18·0495	337·238	2·5279370
" " "	1235B	2·4816	18·0297	337·610	2·5284144
" Intermediate.. ..	944	2·937	18·068	336·900	2·5275012
" "	1178	2·949	18·069	336·882	2·5274772
Heavy Deep Sea[b]	1236	2·578	18·038	337·459	2·5282209
Grappling Rope: new, steel and manilla..	3 × 3 × 4	6·140	18·334	331·996	2·5211322
Grappling Rope: old, " " ..	3 × 3 × 4	5·360	18·269	333·177	2·5226746
Grappling Rope: " " hemp ..	3 × 3 × 4	4·980	18·238	333·755	2·5234279
Grappling Rope: " " " ..	3 × 3 × 4	3·975	18·154	335·295	2·5254269
Buoy Rope: new, steel and manilla..	4 × 4	3·860	18·144	335·472	2·5256562
Buoy Rope: old, " " ..	4 × 4	3·800	18·139	335·564	2·5257759
Buoy Rope: new, " " ..	3 × 3	2·700	18·048	337·269	2·5279761
Buoy Rope: old, " " ..	3 × 3	2·950	18·069	336·880	2·5274751
Light Intermediate ..	ex S.S. "Relay"	3·920	18·1495	335·381	2·5255386

S.S. "SILVERTOWN."

CO-EFFICIENTS FOR PORT PICKING-UP DRUM.

Circumference of Drum $= 17' \ 8\frac{7}{8}'' = 17'{\cdot}7396$.

Type.	Factory No.	Circumference in inches.	Length of 1 rev.	Revs. per N.M.	Log.
			feet.		
Shore-End	1953B	6·486	18·280	332·985	2·5224251
Heavy Intermediate ..	1952	5·068	18·162	335·152	2·5252416
" " ..	1952A	5·068	18·162	335·152	2·5252416
Light " ..	1951	3·737	18·051	337·211	2·5279020
Light Deep Sea	1235	2·7196	17·9662	338·803	2·5299467
" " "	1235B	2·4816	17·9464	339·177	2·5304264
Light Intermediate.. ..	944	2·937	17·984	338·461	2·5295089
" "	1178	2·949	17·985	338·442	2·5294847
Heavy Deep Sea[b]	1236	2·578	17·954	339·025	2·5302319
Grappling Rope: new, steel and manilla..	3 × 3 × 4	6·140	18·251	333·511	2·5231106
Grappling Rope: old " " ..	3 × 3 × 4	5·360	18·186	334·703	2·5246600
Grappling Rope: old, steel and hemp ..	3 × 3 × 4	4·980	18·155	335·287	2·5254169
Grappling Rope: " " " ..	3 × 3 × 4	3·975	18·071	336·841	2·5274251
Buoy Rope: new, steel and manilla..	4 × 4	3·860	18·061	337·020	2·5276554
Buoy Rope: old " " ..	4 × 4	3·800	18·056	337·113	2·5277756
Buoy Rope: new " " ..	3 × 3	2·700	17·965	338·833	2·5299861
Buoy Rope: old " " ..	3 × 3	2·950	17·985	338·441	2·5294827
Light Intermediate.. ..	ex S.S. "Relay"	3·920	18·0662	336·928	2·5275365

CENTRAL AND SOUTH AMERICAN DUPLICATE CABLES EXPEDITION, 1891.

S.S. "SILVERTOWN."

MILEAGE TABLE FOR LIGHT DEEP SEA, No. 1235.

Revs. per min.	Knots per hour.	Revs. per min.	Knots per hour.	Revs. per min.	Knots per hour.
1	·176	21	3·696	41	7·216
2	·352	22	3·872	42	7·392
3	·528	23	4·048	43	7·568
4	·704	24	4·224	44	7·744
5	·880	25	4·400	45	7·920
6	1·056	26	4·576	46	8·096
7	1·232	27	4·752	47	8·272
8	1·408	28	4·928	48	8·448
9	1·584	29	5·104	49	8·624
10	1·760	30	5·280	50	8·800
11	1·936	31	5·456	51	8·976
12	2·112	32	5·632	52	9·152
13	2·288	33	5·808	53	9·328
14	2·464	34	5·984	54	9·504
15	2·640	35	6·160	55	9·680
16	2·816	36	6·336	56	9·856
17	2·992	37	6·512	57	10·032
18	3·168	38	6·688	58	10·208
19	3·344	39	6·864	59	10·384
20	3·520	40	7·040	60	10·560

S.S. "SILVERTOWN."

SYNOPSIS OF VOYAGE.

SYNOPSIS OF VOYAGE.

S.S. "SILVERTOWN."

1893.	
Jan. 18th.	Left Silvertown for Greenhithe.
,, 22nd.	Left Greenhithe for Tenerife.
,, 24th.	At anchor in St. Helen's Bay, Isle of Wight, for eight hours, for engine-room purposes.
,, 25th.	Rounded Ushant.
Feb. 1st.	Arrived at and left Santa Cruz de Tenerife.
,, 5th.	Arrived at and left St. Vincent, Cape Verdes.
,, 11th.	Passed Island of Fernando de Noronha.
,, 17th.	Passed Cape Frio.
,, 22nd.	Passed Cape Corrientes.
,, 27th.	Entered the Straits of Magellan.
,, 28th.	Arrived at Sandy Point.
Mar. 1st.	Left Sandy Point and anchored in Glacier Bay same evening.
,, 2nd.	Passed out of the Straits of Magellan by Cape Pillar.
,, 8th.	Arrived at Coronel, Chili.
,, 12th.	Left Coronel.
,, 13th.	Arrived at Valparaiso.
,, 14th.	Left Valparaiso for Callao.

S.S. "SILVERTOWN."

1893. Mar. 20th.	Arrived at Callao.
„ 23rd.	Sounding off Chorrillos.
„ 24th.	Laid Chorrillos Shore-End.
„ 25th.	At Callao, coaling ship.
„ 26th.	Left Callao for Santa Elena, sounding *en route.*
„ 31st.	Arrived at Santa Elena.
April 1st.	Laid Santa Elena northern Shore-End.
„ 2nd.	Commenced laying cable from Santa Elena to Chorrillos.
„ 7th.	Completed Chorrillos—Santa Elena Section, and put into Callao for coal.
„ 12th.	Left Callao for Santa Elena.
„ 16th.	Arrived at Santa Elena and spliced on a piece of Light Intermediate cable, ex "Relay," to northern Shore-End.
„ 17th.	Left Santa Elena for San Juan del Sur, sounding *en route.*
„ 23rd.	Arrived at San Juan del Sur.
„ 24th.	Landed San Juan del Sur northern Shore-End.
„ 25th.	Laid out „ „ „ „ „ „ „
„ 26th.	Left San Juan del Sur for Salina Cruz, sounding *en route.*
„ 30th.	Arrived at Salina Cruz.
May 2nd.	Salina Cruz Shore-End successfully landed.
„ 3rd.	Left Salina Cruz, laying cable to San Juan del Sur.
„ 7th.	Completed the Salina Cruz—San Juan del Sur Section.
„ 8th.	Arrived at San Juan del Sur.
„ 12th.	San Juan del Sur southern Shore-End landed. Left San Juan del Sur, laying cable to Santa Elena.

S.S. "SILVERTOWN."

1893. May 18th.	Completed the San Juan del Sur—Santa Elena Section, and arrived at Santa Elena.
„ 21st.	Left Santa Elena.
„ 24th.	Arrived at Callao.
„ 30th.	Left Callao, and laid out spare cable.
June 7th.	Arrived at Coronel.
„ 13th.	Left Coronel for Straits of Magellan, *en route* for England.
„ 19th.	Passed Cape Pillar and entered Straits of Magellan. Steaming off Port Tamar all night.
„ 20th.	Anchored in Borja Bay for the night.
„ 21st.	Arrived at Sandy Point.
„ 22nd.	Left Sandy Point, and anchored in Gregory Bay for the night.
„ 23rd.	Passed out of the Straits of Magellan, rounding Cape Virgins at 3 p.m.
July 4th.	Passed Cape Frio, Brazil.
„ 10th.	Called at Fernando de Noronha.
„ 17th.	Arrived at and left St. Vincent, Cape de Verde.
„ 22nd.	Arrived at and left Tenerife for London.
„ 28th.	Passed Cape Finisterre.
Aug. 1st.	Arrived in London. Ship docked in Victoria Docks.

ARRIVAL AT CALLAO.

COALING.

TRANSFERRING CABLE TO S.S. "RELAY."

March 20th to March 22nd, 1893.

ARRIVAL AT CALLAO.

S.S. "SILVERTOWN."

Hour. A.M.	MONDAY, MARCH 20TH, 1893.
6.0	Land in sight on starboard bow.
8.0	Calm. Fine clear weather. Bar. 30·130 (68° F.). Temp. 72°·2 F. dry, 68° F. wet. Sea surface 66° F. Temp. in cable tanks, bottom of cone: fore tank 70½° F., main tank 70° F., after tank 70½° F. Position by land { Lorenzo Lighthouse N 18° W, 18·5 N.M. / Fronton Island N 7° W. } Current observed since 9.37 p.m. yesterday = N 28° W, 13·0 N.M. = 1·2 KTS.
9.0	Cable in each tank well flushed down with water by hose. Temp. in cable tanks, bottom of cone: fore tank 70° F., main tank 70° F., after tank 70° F.
10.33	San Lorenzo Lighthouse abeam, bearing S 30° E, 0·75 N.M. distant.
11.17	Let go starboard anchor in 6¼ fms. in Callao harbour. Draught of ship { Forward 24′ 6″. / Aft 28′ 9″. } NOTE.—Mr. Stoddart states that there are 924 tons of coal remaining on board now. Telegraph steamers "Relay" and "Retriever" at anchor in the harbour.
11.25	Received pratique.
11.40	Port officials left ship. Captain Lugar and Mr. Kingsford, of the C. & S.A. Telegraph Co., Messrs. J. Eyre and Kennedy, of Messrs. Grace Brothers, Mr. Drew, of Messrs. Shute & Co., and Capt. Stamm, of the Pacific Steam Navigation Co., came on board.
NOON.	Calm. Fine and clear. Bar. 30·050 (69° F.). Temp. 70°·7 F. dry, 68° F. wet. Sea surface 61° F.

HOUR. P.M.	MONDAY, MARCH 20TH, 1893—*contd.*
	Temp. in cable tanks, bottom of cone: fore tank 71° F, main tank 70½° F., after tank 70½° F.
0.25	Captain Minhinnick, of the S.S. "Retriever," came on board.
1.0	Commenced to run water into each cable tank, so as to bring water level with top flake of cable.
2.5	Captain Morton, with Drs. Cruttwell and Toms, and Mr. H. T. Pescod, left for the British Consulate. Dr. Cruttwell to sign off ship's articles (as he is about to leave ship), Dr. Toms to sign articles as Surgeon instead of Assistant-Surgeon, and Mr. Pescod, who leaves ship, also to sign off articles.
2.15	Captain Hunter, and Messrs. M. H. Gray and H. P. Daley, left for shore to visit Messrs. Graham, Rowe, & Co. (Agents), in Lima. Messrs. Booth, Beach, and Kay, who have come out in ship to join S.S. "Relay," also left for the British Consulate, to sign off ship's articles and join S.S. "Relay."
3.35	Mr. Falshaw, Chief Officer of the S.S. "Relay," came on board.
5.25	Finished running water into fore cable tank. Temp. at bottom of the cone now 62° F.
6.45	Finished running water into main cable tank. Temp. at bottom of the cone now 63° F.
7.0	Finished running water into after cable tank. Temp. at bottom of the cone now 63° F.
7.30	Messrs. M. H. Gray and Daley and Captain Hunter returned from Lima to ship. NOTE.—While in Lima, Mr. M. H. Gray telegraphed to Silvergray, London, news of ship's arrival here to-day, and arranged with Messrs. Graham, Rowe, & Co. to deal with Captain Hunter in all matters connected with ship's business in this port.
8.0	Light SE breeze. Fine clear weather. Bar. 30·090 (68° F.). Temp. 71·°2 F. dry, 67°·3 F. wet. Sea surface 63° F.
10.35	During this evening, tests have been taken on all cable in tanks, with satisfactory results.

HOUR.	
A.M.	**Transferring Cable to S.S. "Relay."**
	TUESDAY, MARCH 21ST, 1893.
6.40	An empty lighter came alongside for cable for S.S. "Relay."
6.55	Commenced transferring to lighter on port side 1·197 N.M. of Shore-End cable, No. 1953B, Sec. "3C" (labelled "M4," and known as "Piece G"), from main tank for S.S. "Relay," with port picking-up drum.
7.50	Commenced shipping fresh water in main boilers.
8.0	Calm. Fine clear weather. Bar. 30·120 (68° F.). Temp. 65° F. dry, 64°·4 F. wet. Sea surface 60·1 F. Temp. in cable tanks, bottom of cone: fore tank 65° F., main tank 65½° F., after tank 65½° F.
8.42	Finished transferring to lighter the 1·197 N.M. of Shore-End cable from main tank for "Relay." By port picking-up drum measurement this length is only 1·111 N.M. Ends of the cable sealed, and cable well covered with canvas in the lighter.
8.43	Mr. Daley left for shore, with ship's mail, and to telegraph Mr. R. K. Gray, London, and also to obtain passage tickets for Mr. M. H. Gray and Dr. Cruttwell, who leave ship to-day.
8.45	Put two ┬ joint boxes and a case of sundries, from S.S. "Silvertown," into the lighter for S.S. "Relay."
8.55	Lighter, with cable, &c., left for S.S. "Relay."
11.25	Commenced to pump water out of fore cable tank.
NOON.	Light S'ly breeze. Fine and clear. Bar. 30·050 (68° F.). Temp. 66°·5 F. dry, 65°·5 F. wet. Sea surface 61° F. Temp. in cable tanks, bottom of cone: fore tank 63° F., main tank 65½° F., after tank 65½° F.
P.M.	
0.54	Mr. Milne left ship.
1.0	Finished shipping 50 tons of fresh water in main boilers.
1.31	Captain Lugar and Mr. Kingsford came on board.
2.0	Finished pumping water out of fore cable tank.

Hour. P.M.	
	Transferring Cable to S.S. "Relay"—*contd.*
	TUESDAY, MARCH 21st, 1893—*contd.*
3.0	A quantity of provisions has been shipped to-day.
3.55	Mr. M. H. Gray and Dr. Cruttwell took leave of ship, and left for the mail steamer "Aconcagua."
4.0	Tests taken on all cable in tanks this afternoon by Mr. J Rymer-Jones, in the presence of Mr. Kingsford (of the C. & S.A. Telegraph Co.), with satisfactory results.
4.42	Captains Hunter and Morton returned to ship. S.S. "Aconcagua" left the port for Panama.
5.45	Mr Daley came on board with a case of charts sent out per S.S. "Orinoco."
6.20	Temp. in cable tanks, bottom of cone: fore tank 67° F., main tank 65° F., after tank 65½° F.
8.0	Light S'ly wind. Fine and clear. Bar. 30·100 (68° F.). Temp. 66° F. dry, 65° F. wet. Sea surface 64° F.
MIDNT.	Calm. Fine and clear.
	Coaling.
	WEDNESDAY, MARCH 22nd, 1893.
A.M. 8.0	Calm. Fine and clear. Bar. 30·100 (69° F.). Temp. 65°·8 F. dry, 63°·5 F. wet Sea surface 63° F. Temp. in cable tanks, bottom of cone: fore tank 66° F., main tank 64° F., after tank 64½° F.
9.5	Captain Morton and Mr. R. S. Lloyd left in steam-launch for Chorrillos, to select and mark with buoys a safe and suitable anchorage for ship to land Shore-End cable.
10.10	Temp. in cable tanks, bottom of cone: fore tank 65½° F., main tank 64° F., after tank 64° F.
10.40	Commenced shipping fresh water in fresh water tanks.
11.30	Tests taken on all cable in tanks this morning, with satisfactory results.

HOUR.	
	Coaling—*contd.*
	WEDNESDAY, MARCH 22ND, 1893—*contd.*
NOON.	Light SSE airs. Fine, but hazy. Bar. 30·050 (68° F.). Temp. 66°·5 F. dry, 66° F. wet. Sea surface 63°·2 F. Temp. in cable tanks, bottom of cone: fore tank 66° F., main tank 65° F., after tank 65½° F. Sent the following telegram this morning:—"Captain Hunter to Kingsford, Barranco.—Would you kindly oblige by having trench opened ready for Shore-End cable first thing Friday morning. Expenses to be defrayed by Graham, Rowe, & Co. for I. R. Co."
P.M. 2.55	Shipped a new boat from Messrs. Shute & Co., in place of port surf-boat lost on 20.2.93, during voyage out.
3.25	Finished shipping fresh water, having received 27½ marks = about 25 tons.
4.53	Captain Morton and Mr. R. S. Lloyd returned in steam-launch from Chorrillos. NOTE.—The steam-launch was delayed on the way to Chorrillos this morning, owing to a dense fog near Horrodada Island.
5.7	Captain Morton left for shore, to advise the Captain of the Port that ship leaves for Chorrillos to-morrow. Temp. in cable tanks, bottom of cone: fore tank 66° F., main tank 65½° F., after tank 66° F.
6.27	Received the following telegram this afternoon:—"Kingsford, Barranco, to Captain Hunter, Callao.—Certainly will attend to trench."
8.0	Calm. Fine and clear. Bar. 30·100 (67° F.). Temp. 66·5° F. dry, 67° F. wet. Sea surface 63·5° F.

SOUNDING OFF CHORRILLOS.

AT ANCHOR OFF CHORRILLOS.

March 23rd, 1893.

SOUNDING OFF CHORRILLOS.

"S.S. SILVERTOWN."

HOUR. A.M.	THURSDAY, MARCH 23RD, 1893.
4.0	Calm. Fine and clear.
5.25	Weighed anchor and set on for position to take soundings. Steam-launch left for Chorrillos.
6.20	San Lorenzo Lighthouse bearing S 43° E, 0·9 N.M. distant. Set course S 61° W.
	Calm. Fine and clear overhead, but very misty round horizon. Bar. 30·115 (68° F.). Temp. 67°·4 F. dry, 67°·2 F. wet. Sea surface 66°·5 F. Position by land { San Lorenzo Lighthouse bearing N 62° E. / Fonton Island bearing N 82° E. } Temp. in cable tanks, bottom of cone: fore tank 65½° F., main tank 65° F., after tank 65° F.
9.25	Sounding 1 S { Lat. 12° 13′·8 S, Long. 77° 36′·6 W } 211 fms. Lost 10 fms. of wire and sinker. No bearings obtainable, as land is obscured by haze.
10.6	Sounding 2 S { Lat. 12° 15′·8 S, Long. 77° 36′·0 W } 291 fms. gn. m. and s.
10.15	Since 8 a.m. pumped a quantity of the water out of main and after cable tanks.
10.45	Sounding 3 S { Lat. 12° 15′·1 S, Long. 77° 33′·6 W } 130 fms. grt. m. and s. San Lorenzo Lighthouse bearing N 57° E.
11.0	Cable in each tank well flushed with water by hose. Depth of water now in cable tanks: fore tank 2″, main tank 1′ 8″, after tank 3′ 5″.
11.14	Sounding 4 S { Lat. 12° 14′·3 S, Long. 77° 33′·0 W } 107 fms. gn. m. San Lorenzo Lighthouse bearing N 59° E.

HOUR.	THURSDAY, MARCH 23RD, 1893—*contd.*
A.M.	
11.49	Sounding 5 S { Lat. 12° 15′·9 S / Long. 77° 31′·3 W } 102 fms. gn. m. San Lorenzo Lighthouse bearing N 52° E.
NOON.	Calm. Fine, but cloudy. Very hazy round the horizon. Calm sea. Bar. 30·050 (69° F.). Temp. 69°·2 F. dry, 68° F. wet. Sea surface 66°·2 F. Temp. in cable tanks, bottom of cone: fore tank 66½° F main tank 66° F., after tank 66° F.
P.M.	
1.45	T. Sounding 6 S { Lat. 12° 12′·0 S / Long. 77° 16′·3 W } 58 fms. gn. m. { Temp. at bottom by Therm. No. 87859 = 56°·3 F., 7·44 mm. Temp. of surface water 67° F. Position by land { N end of San Lorenzo Island bearing N 5° E. / S " " " " N 38° E.
1.52	Set on for anchorage off Chorrillos town.

At Anchor off Chorrillos.

4.17	Let go starboard anchor in 7 fms. off Chorrillos. Steam-launch came alongside. Position of ship { Cable Offices at Barranco N 89° E. / Barracks at Chorrillos S 63½° E. / Solar Point Rock S 1½° E. Sounded round ship and found 7 to 8 fms.
4.22	Mr. Kingsford joined ship as the representative of the C. & S.A. Tel. Co. during the laying of cables.
4.55	Steam-launch with surf-boat in tow left for shore with Capt. Hunter, Capt. Morton, and Messrs. Robinson, Kingsford, Lloyd, and Bates. Draught of ship { Forward 25′ 0″. / Aft 29′ 0″.
6.0	Temp. in cable tanks, bottom of cone: fore tank 66° F., main tank 66½° F., after tank 67° F.

HOUR. P.M.	THURSDAY, MARCH 23RD, 1893—*contd.*
	At Anchor off Chorrillos—*contd.*
6.5	Capt. Hunter, Capt. Morton, and Messrs. Kingsford, Robinson, Lloyd, and Bates returned to ship, having examined landing place for Shore-End, and marked with a buoy (blue flag) the 3-fms. shoal to shoreward of ship, so that the Shore-End, which is to be landed to-morrow, may be kept clear of it. The trench for Cable-End has not yet been opened, but Mr. Kingsford says it will be commenced first thing to-morrow morning.
8.0	Calm. Fine, but cloudy and hazy. Bar. 30·050 (72° F.). Temp. 70°·5 F. dry, 68°·9 F. wet. Sea surface 67° F.
9.30	Tests taken on all cable in tanks this evening with satisfactory results, and the top end of Chorrillos Shore-End in fore tank sealed ready for landing in the morning.

SANTA ELENA—CHORRILLOS SECTION.

LANDING AND LAYING CHORRILLOS SHORE-END.

LAYING CHORRILLOS HEAVY AND LIGHT INTERMEDIATE.

BUOYING END OF LIGHT INTERMEDIATE.

MARCH 24TH TO MARCH 25TH, 1893.

SANTA ELENA—CHORRILLOS SECTION.

S.S. "SILVERTOWN."

HOUR. A.M.	Landing Chorrillos Shore-End. FRIDAY, MARCH 24TH, 1893.
6.0	Cable hands turned to and commenced getting balloon-buoys along to quarter deck, and loading surf-boat with sand anchors, spider wheels, chain, shovels, picks, &c., required on the beach for landing Shore-End.
6.22	Messrs. P. Bates and C. H. L. Cazalet, with W. Tillyer, Foreman's mate, and 7 cable hands left in surf-boat, containing Shore-End landing gear, in tow of steam-launch, for cable landing place.
6.30	Calm. Fine bright morning, but misty over land. Lowered cutters.
6.40	Commenced coiling hauling lines in cutters.
6.50	Tests taken on the spliced sections of Shore-End, Heavy Intermediate, and Light Intermediate in fore tank, for Chorrillos End, with satisfactory results.
7.10	Steam-launch returned to ship with surf-boat.
7.20	Thick fog came on, obscuring land all round.
7.55	Finished coiling 8 coils of 4½″ rope for hauling lines in port cutters.
8.0	Calm. Fine, but cloudy. Fog hanging round the bay, but clearing gradually. Calm sea. Bar. 30·120 (66° F.). Temp. 66°·9 F. dry, 66°·5 F. wet. Sea surface 67°·2 F. Temp. in cable tanks, bottom of cone: fore tank 66½° F. main tank 66° F., after tank 66½° F.
8.5	Finished coiling 7 coils of 4″ and 1 coil of 4½″ rope in starboard cutter for hauling line.
8 48	Steam-launch left, with port cutter in tow, for the beach. Labourers on the beach opening out cable trench from cable hut to water's edge.

HOUR. A.M.	**Landing Chorrillos Shore-End**—*contd.*
	FRIDAY, MARCH 24TH, 1893—*contd.*
9.7	Observed end of rope from port cutter landed at cable hut, and cutter, in tow of steam-launch, returning to ship, paying out rope on the way.
9.25	Insufficient rope in port cutter to reach ship's stern by about 50 fms. Starboard cutter moved up to port cutter and shackled on another rope.
9.30	End of rope passed on board over stern sheave from starboard cutter.
9.34	Messrs. Howard and Ireland, of the Central and South American Telegraph Company came on board. Mr. H. S. Howard is to join ship as Mr. Kingsford's assistant during the laying of cables.
9.36	Starboard cutter, with 7 coils of 4″ rope, left in tow of steam-launch for cable hut.
9.40	Coiled a 4″ rope in surf-boat ready for use, should starboard cutter not have enough rope to reach ship.
9.48	Observed end of rope from starboard cutter landed on the beach in front of cable hut, and shackled on to the end of the rope that was landed by port cutter.
9.56	Observed starboard cutter, in tow of steam-launch, returning to ship, paying out rope.
10.7	Shore hoisted "all ready" signal.
10.8	Starboard cutter signalled for more rope. Surf-boat left ship, paying out rope from port picking-up drum and over port quarter, towards cutter to complete lines.
10.10	Depth of water at ship's stern $=7\frac{1}{2}$ fms.
10.14	Surf-boat met cutter and joined ropes, thus forming endless messenger, of 4″ and $4\frac{1}{2}$″ ropes, between ship and shore.
10.16	Commenced to heave in the slack of messenger over port quarter with port picking-up drum. Commenced veering away on anchor chain as required. Cutter and surf-boat returned to ship.

HOUR.	**Landing Chorrillos Shore-End**—*contd.*
A.M.	FRIDAY, MARCH 24TH, 1893—*contd.*
10.30	Ship now swung round with stern towards Cable Hut. Stopped heaving in on messenger. Hauled end of Shore-End, No. 1953B, pt. Sec. "3B," from fore tank to stern baulks, taking three turns round paying-out drum. Bent Shore-End on to end of messenger between ship and shore.
10.42	Commenced heaving in on messenger again. End of Shore-End cable passed over stern sheave with 1st balloon buoy attached. Ship by bearings now 1 N.M. from beach.
10.50	90 fms. paid out on starboard bower chain; stopped veering away. Depth at ship's stern = $7\frac{1}{2}$ fms. Sent steam-launch away to follow cable ashore.
11.38	Steam-launch made signals that rope close to the end of cable is foul on bottom. Stopped paying out cable and heaving in on messenger. 0·7066 N.M. of cable paid out.
11.50	Steam-launch apparently unable to clear rope or cable from the bottom.
11.58	Slacked up messenger a little.
NOON.	Light SW airs. Fine and clear. Mist round horizon. Slight S'ly swell. Bar. 30·080 (70° F.). Temp. 73° F. dry, 70°·5 F. wet. Sea surface 70°·2 F. Temp. in cable tanks, bottom of cone: fore tank $69\frac{1}{2}$° F., main tank 69° F., after tank $69\frac{1}{2}$° F.
P.M. 0.1	Mr. Robinson left in surf-boat with a coil of 4″ rope, boat's grapnel, and tackles to assist steam-launch in clearing line.
0.15	Steam-launch and surf-boat endeavouring to clear rope from the bottom close to buoy on end of cable.
0.25	Observed steam-launch with surf-boat in tow making for the beach.
0.30	Surf-boat now under-running rope from beach to end of cable.
0.45	Mr. Raper, of the West Coast of America Telegraph Company, came on board with a telegram from London.
1.2	Surf-boat signalled, "Heave away." Line now clear.

HOUR. P.M.	**Landing Chorrillos Shore-End**—*contd.* FRIDAY, MARCH 24TH, 1893—*contd.*
1.3	Resumed heaving in on messenger and paying out cable. Surf-boat apparently holding on to end of cable.
1.13	Surf-boat let go end of cable.
1.17	Observed one of the balloon buoys on cable sink. Surf-boat cast off from steam-launch and took hold of the bight of cable at sunken buoy.
1.22	Steam-launch came alongside and asked for 2 balloon buoys.
1.35	All balloon buoys (55) now on cable. Sent cutters to stern of ship to hold up bight of cable as required.
1.40	1st balloon buoy ashore, end of cable on beach. 1·123 N.M. of Shore-End cable paid out from ship to beach, but cable between ship and shore lies somewhat in the form of a letter " S ", with bight nearest ship leading seawards. Position of ship { Cable Offices at Barranco < Barracks at Chorrillos 28° 20′. Mole at Chorrillos < Barracks at Chorrillos 24° 20′. Mole at Chorrillos < Codo Point 33° 55′. Morro Solar vertical angle, 4° 24′ = 1·9 N.M. distant. } Lat. 12° 9′·5 S. Long. 77° 3′·6 W. Distance between spider sheaves on beach = 112 feet. From the spider wheel nearest cable to Cable Hut = 130 feet along cable trench. Depth of cable trench = 2 to 4½ feet. Distance by chart from ship to Cable Hut = 1·06 N.M.
1.55	Shore signalled, " Enough cable on shore." 1·147 N.M. of Shore-End cable paid out − 1·123 N.M. = 0·024 N.M. of Shore-End cable on beach.
1.57	Mr. Robinson with 5 cable hands returned to ship, leaving surf-boat holding up bight of cable near beach.
2.35	Testing room reports cable making earth, possibly seal on end of cable on beach damaged.
2.38	Shore hoisted " all clear " signal.
3.1	Captain Hunter and Messrs. J. Rymer-Jones, Kingsford, Raper, and Ireland, with Jointer Gowing left in steam-launch

Hour. P.M.	**Landing Chorrillos Shore-End**—*contd.* FRIDAY, MARCH 24TH, 1893—*contd.*
	for Cable Hut, taking with them a crew of cable hands for the surf-boat holding on to cable near beach.
3.33	Steam-launch returned with message to take balloon buoys off cable.
3.36	Shore signalled, "Please test and say if 'O.K.'" Steam-launch and cutters left to take buoys off cable.
3.48	Depth at stern of ship=8 fms. Temp. at bottom=63° F.
3.49	Signalled to shore, "Tests 'O.K.'"
3.51	Shore signalled, "'O.K.' Haul off line."
3.53	Commenced to heave in on the remainder of rope which formed endless messenger.
4.0	Steam-launch left for shore in answer to signals.
4.11	Shore signalled, "Cast off balloon buoys."
4.15	Occasional strain on messenger; picking up on it according to strain. NOTE.—Since the rope from ship was taken off the end of cable on the beach the ship has swung round with head more to seawards, and straightened out the bight of cable between ship and shore considerably.
4.28	Surf-boat returned from shore with fifteen balloon buoys, two spider wheels and sand anchors, a coil of 4″ rope, chain, and sundry gear from the beach.
4.35	Picking up on rope that formed messenger slowly, as strain increases at times.
4.42	Steam-launch returned to ship with Capt. Hunter and Messrs. Kingsford, J. Rymer-Jones, and Cazalet; also Jointer Gowing and Tillyer (Foreman's mate), with the five cable hands who have been working on the beach to-day. Several balloon buoys and the remainder of the gear that has been in use on the beach also brought back by steam-launch.

Hour. P.M.	**Landing Chorrillos Shore-End**—*contd.* FRIDAY, MARCH 24TH, 1893—*contd.*
NOTE.	It was found that cable had been cut on the beach, thus accounting for the earth which showed in tests taken at 2.35 p.m. 5 fms. = 0·005 N.M. cut off end of cable on beach, as there was more than sufficient to reach Cable Hut. 0·024 N.M. — 0·005 N.M. = 0·019 N.M. of Shore-End cable now on beach between Hut and water's edge. 1·142 N.M. OF SHORE-END CABLE NOW BETWEEN SHIP AND CABLE HUT. Cable laid in the trench on beach, and well buried by native labourers.
5.0	Commenced to heave in on bower chain to 45 fms. Paying out cable as necessary.
5.19	End of the rope that formed messenger came inboard over port quarter. Hoisted up surf-boat.
5.21	Stopped picking up on anchor chain; stopped paying out on cable.
5.25	Put another turn of cable on drum (four in all).
5.30	Mr. P. Bates returned to ship in steam-launch, with the remainder of balloon buoys and both cutters in tow. Set about getting buoys on board.
5.53	Both cutters hoisted up. Steam-launch left for Callao, to await ship's arrival there, and taking a note from Mr. Kingsford to Capt. Lugar, of the "Relay," asking him to take the crew of the steam-launch on board his vessel if necessary. Temp. in cable tanks, bottom of cone: fore tank 70° F., main tank 70° F., after tank 70½° F.
6.16	Commenced heaving up anchor.
6.18	Commenced to pay out cable.
6.22	Anchor aweigh. Set on "slow ahead" = 18 revs. per min.
6.23	Put engine of paying-out machine out of gear. SHIP ON COURSE S 80° W. Weight on brake levers = 1,380 lbs., but brakes right up. Position { Solar Point Rock bearing S 3° E. / Cable Office Barranco bearing N 85° E. }
6.25	Cable commenced running out according to strain = 30 cwt.

Hour. P.M.	**Laying Chorrillos Shore-End**—*contd.*
	FRIDAY, MARCH 24TH, 1893—*contd.*
6.30	Increased ship's engines to 22 revs. per min.
6.35	Ship's engines=22 revs. per min. Drum=15 revs. per min.=about 3 KTS.
6.37	Increased ship's engines to 25 revs. per min.
6.43	Ship's engines=24½ revs. per min. Drum=17½ revs. per min.=about 3·2 KTS.
6.49	Weight on brake levers decreased to 844 lbs. (12 weights).
7.0	2·847 N.M. of Shore-End—0·005 N.M., No. 1953B, pt. Sec. "3B," paid out from fore tank. TOTAL CABLE LAID FROM CHORRILLOS HUT=2·842 N.M. 2·847 N.M.—1·147 N.M.=1·700 N.M. of cable paid out from anchorage. Patent log=1·1 N.M. Depth=12 fms. Drum=20 revs. per min.=3·5 KTS. Ship's engines=25 revs. per min. Weight on brake levers=844 lbs. Dynamometer=23 cwt. Strophometer=18 revs.
7.30	4·763 N.M.—0·005 N.M. of Shore-End, No. 1953B, pt. Sec. "3B," paid out from fore tank. Patent log=2·7 N.M. TOTAL CABLE LAID FROM CHORRILLOS HUT=4·758 N.M. Depth=14 fms. Drum=22 revs. per min.=3·9 KTS. Ship's engines=25 revs. per min. Weight on brake levers=844 lbs. Dynamometer=22 cwt. Strophometer=20 revs.
8.0	Light S'ly airs. Fine, but overcast. Slight S'ly swell. Bar. 30·060 (71° F.). Temp. 70°·2 F. dry, 69°·0 F. wet. Sea surface 69°·5 F. 6·733 N.M.—0·005 N.M. of Shore-End, No. 1953B, pt. Sec. "3B," paid out from fore tank. Patent log=4·3 N.M. TOTAL CABLE LAID FROM CHORRILLOS HUT=6·728 N.M. Depth=13 fms. Drum=23 revs. per min.=4·0 KTS. Ship's engines=25 revs. per min. Weight on brake levers=844 lbs. Dynamometer=22 cwt. Strophometer=22 to 23 revs.

HOUR. P.M.	**Laying Chorrillos Heavy Intermediate.**
	FRIDAY, MARCH 24TH, 1893—*contd.*
8.13	SPLICE between Shore-End, No. 1953B, pt. Sec. "3B," and Heavy Intermediate, No. 1952, pt. Sec. "3," from fore tank passed off drum. Patent log=5·0 N.M. Depth=13 fms. 7·551 N.M. of shore-End, No. 1953B, pt. Sec. "3B," paid out from fore tank. By Factory measurement .. .. .. =7·500 N.M. Cut off on beach .. .. =0·005 N.M. TOTAL CABLE LAID FROM CHORRILLOS HUT =7·495 N.M. By Drum measurement .. .. .. =7·551 N.M. Cut off on beach .. .. =0·005 N.M. TOTAL CABLE LAID FROM CHORRILLOS HUT =7·546 N.M. Difference .. .. =0·051 N.M. Position of splice: Palominos Islands, South extremity bearing N 65° W. San Lorenzo Island, East extremity bearing N 26° W. Wells Island bearing N 48° W. — Lat. 12° 10′·9 S. Long. 77° 10′·0 W.
8.30	1·181 N.M. of Heavy Intermediate, No. 1952, pt. Sec. "3," paid out from fore tank. Patent log=6·0 N.M. TOTAL CABLE LAID FROM CHORRILLOS HUT=8·676 N.M. Depth=13 fms. Drum=25½ revs. per min.=4·5 KTS. appx. Ship's engines =26 revs. per min. Weight on brake levers=844 lbs. Dynamometer=(just lifting). Strophometer=18 to 25 revs.
9.0	3·263 N.M. of Heavy Intermediate, No. 1952, pt. Sec. "3," paid out from fore tank. Patent log=7·5 N.M. TOTAL CABLE LAID FROM CHORRILLOS HUT=10·758 N.M. Depth=30 fms. Drum=24 revs. per min.=4·2 KTS. Ship's engines=26½ revs. per min. Weight on brake levers=844 lbs. Dynamometer=(lifting). Strophometer=18 to 25 revs.

HOUR. P.M.

Laying Chorrillos Light Intermediate.

FRIDAY, MARCH 24TH, 1893—*contd.*

9.3 SPLICE between Heavy Intermediate, No. 1952, pt. Sec. "3," and Light Intermediate, No. 1951, pt. Sec. "2," from fore tank passed off drum.

3·486 N.M. of Heavy Intermediate, No. 1952, pt. Sec. "3," paid out from fore tank. Patent log = 7·7 N.M.

Depth = 30 fms.

Length by Factory measurement of Heavy Intermediate, pt. Sec. "3," paid out	= 3·490 N.M.
Length by Drum measurement of Heavy Intermediate, pt. Sec. "3," paid out	= 3·486 N.M.
Difference	= 0·004 N.M.

TOTAL CABLE LAID FROM CHORRILLOS HUT = 10·985 N.M.

Position of splice:
- Palominos Island, East extremity bearing N 26° W
- San Lorenzo Island, East extremity bearing N 9° E
- San Lorenzo Light bearing N 19° W

Lat. 12° 11′·5 S.
Long. 77° 13′·1 W.

9.27 Increased ship's engines to 28 revs. per min.

9.30 1·930 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from fore tank. Patent log = 9·1 N.M.

TOTAL CABLE LAID FROM CHORRILLOS HUT = 12·915 N.M.

Depth = 50 fms.

Drum = 26 revs. per min. = 4·5 KTS. Ship's engines = 28½ revs. per min. Weight on brake levers = 844 lbs. Dynamometer = nil. Strophometer = 20 to 25 revs.

9.37 Increased ship's engines to 30 revs. per min.

10.0 4·561 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from fore tank. Patent log = 11·2 N.M.

TOTAL CABLE LAID FROM CHORRILLOS HUT = 15·546 N.M.

Depth = 60 fms.

Drum = 30 revs. per min. = 5·28 KTS. Ship's engines = 30 revs. per min. Weight on brake levers = 844 lbs. Dynamometer = nil. Strophometer = 26 to 31 revs.

10.10 Increased ship's engines to 32 revs. per min.

HOUR. P.M.	**Laying Chorrillos Light Intermediate**—*contd.*
	FRIDAY, MARCH 24TH, 1893—*contd.*
10.30	7·326 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from fore tank. Patent log=13·5 N.M. TOTAL CABLE LAID FROM CHORRILLOS HUT=18·311 N.M. Depth=70 fms. Drum=31 revs. per min.=5·45 KTS. Ship's engines=32 revs. per min. Weight on brake levers=844 lbs. Dynamometer=nil. Strophometer=28 to 31 revs.
10.55	9·620 N.M. of Light Intermediate, No. 1951, pt. Sec. "2" paid out from fore tank. TOTAL CABLE LAID FROM CHORRILLOS HUT=20·605 N.M.
11.0	10·123 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from fore tank. Patent log=16·0 N.M. TOTAL CABLE LAID FROM CHORRILLOS HUT=21·108 N.M. Depth=85 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=32 revs. per min. Weight on brake levers=844 lbs. Dynamometer=nil. Strophometer=28 to 31 revs.
11.20	Since 10.45 p.m. the deflection while testing has not been as steady as desired, but the insulation has not appreciably fallen.
11.30	13·103 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from fore tank. Patent log=18·5 N.M. TOTAL CABLE LAID FROM CHORRILLOS HUT=24·088 N.M. Depth=90 fms. Drum=34 revs. per min.=5·98 KTS. Ship's engines=32 revs. per min. Weight on brake levers=844 lbs. Dynamometer=nil. Strophometer=30 to 31 revs.
MIDNT.	Light South wind. Overcast and cloudy, but fine. Slight S'ly swell. Bar. 30·080 (71° F.). Temp. 68° F. dry, 67°·7 F. wet. Sea surface 66° F. 15·971 N.M. of Light Intermediate, No. 1951, pt. Sec. "2" paid out from fore tank. Patent log=21·2 N.M. TOTAL CABLE LAID FROM CHORRILLOS HUT=26·956 N.M. Depth=100 fms. Drum=33½ revs. per min.=5·9 KTS. Ship's engines=32 revs. per min. Weight on brake levers=844 lbs. Dynamometer=nil. Strophometer=29 to 31 revs.

HOUR. A.M.	**Laying Chorrillos Light Intermediate**—*cc ntd.*
	SATURDAY, MARCH 25TH, 1893.
0.30	18·942 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from fore tank. Patent log=23·6 N.M. TOTAL CABLE LAID FROM CHORRILLOS HUT=29·927 N.M. Depth=150 fms. Drum=34 revs. per min.=5·98 KTS. Ship's engines=32 revs. per min. Weight on brake levers=844 lbs. Dynamometer=nil. Strophometer=32 revs.
0.45	Approaching end of cable, slowed engines to 20 revs. per min.
0.48	Stopped ship's engines.
0.52	End of cable now being sealed ready for buoying.
0.53	Strain on cable 18 cwt. Put ship's engines "full speed" astern.
0.55	Stopped engines. Letting cable run according to strain. Patent log=25·3 N.M.
0.58	Weight on brake levers increased to 1380 lbs. Moving engines as required to ease out cable.
1.11	Put engine of paying-out machine in gear, and commenced paying out on cable.
1.15	Sounding 7 S { Lat. 12° 16′·17 S, Long. 77° 34′·4 W } 137 fms. grit.

Buoying End of Chorrillos Light Intermediate.

End of Light Intermediate, No. 1951, pt. Sec. "2," bottom end of piece 4 from fore tank passed off drum.

21·914 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from fore tank.

Length by Factory measurement	..	=	21·986 N.M.
Length by Drum measurement..	..	=	21·914 "
Difference..	..	=	0·072 N.M.

Hour. A.M.	**Buoying End of Chorrillos Light Intermediate**—*contd.*

SATURDAY, MARCH 25TH, 1893—*contd.*

TOTAL CABLE LAID FROM CHORRILLOS HUT:—

Shore-End, No. 1953B, pt. Sec. "3B"	= 7·495 N.M.	Piece 4 or "A" from fore tank.
Heavy Intermediate, No. 1952, pt. Sec. "3"	= 3·490 ,,	
Light Intermediate, No. 1951, pt. Sec. "2"	= 21·986 ,,	
Total	32·971 N.M.	

CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, S 80° W (MADE GOOD S 78° W)=31·824 N.M., CORRECTED TO 7.4.93.

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 80° W=30·900 N.M.

SLACK=3·0 %.

1.16 Bent quarter line on to cable on stern baulks.

1.20 Bent mooring chain of buoy on to end of cable.

1.26 Let go end of cable from stern sheave, and commenced to lower away on moorings of buoy over starboard bow sheave with starboard picking-up drum.

1.43 Let go Buoy "43R," on end of Chorrillos Light Intermediate.

Position of buoy { Lat. 12° 16′·17 S, Long. 77° 34′·4 W } Verified 26.3.93.

Moorings of buoy:—

1 5/8″ bridle.
1 side rope.
200 fms. 4″ × 4″ buoy rope.
40 ,, 5/8″ chain.
10 ,, ,, ,, stray.
1 mushroom=4 cwt. 0 qr. 26 lbs.

1.48 Set on for position to place mark buoy. Course and distance=S 80° W, 2 N.M.

2.20 Stopped ship, and commenced to lower moorings of mark buoy.

HOUR. A.M.	**Buoying End of Chorrillos Light Intermediate**—*contd.*
	SATURDAY, MARCH 25TH, 1893—*contd*
2.30	Sounding 8 S { Lat. 12° 16′·6 S, Long. 77° 36′·8 W } 460 fms. grit.
2.55	Let go mark buoy No. 42, with a cage on flagstaff.
	Position of mark buoy { Lat. 12° 16′·6 S, Long. 77° 36′·8 W } Verified 26.3.93. Moorings of buoy:— 1 $\frac{5}{8}''$ bridle. 2 side ropes, each 20 fms. 400 fms. 4″ × 4″ buoy rope. 50 „ $\frac{5}{8}''$ chain. 1 mushroom = 4 cwt. 1 qr 16 lbs.
3.0	Set on full speed for Callao.

AT CALLAO.

COALING.

MARCH 25TH, 1893.

S.S. "SILVERTOWN."

Hour.	Coaling.
A.M.	SATURDAY, MARCH 25TH, 1893—*contd.*
5.5	San Lorenzo Light bearing N 80° E, 9 8 N.M. distant.
6.36	San Lorenzo Light bearing S, 1·2 N.M.
7.30	Let go anchor in Callao Bay in 7 fms. { Draught of ship { For. 23′ 0″. Aft 29′ 3″.
	Steam-launch came alongside.
7.45	Several lighters with coal came alongside.
8.0	Light S'ly breeze. Fine, but overcast. Bar. 30·100 (70° F.). Temp. 68°·3 F. dry, 66°·3 F. wet. Sea surface 68°·4 F. Temp. in cable tanks, bottom of cone: fore tank 70° F., main tank 69½° F. after tank 70° F.
8.20	Commenced shipping coal in bunkers.
8.45	Commenced shipping fresh water.
9.2	Messrs. Kingsford and J. Rymer-Jones, with Jointer Gowing, left for shore, to proceed by train to Chorrillos to test the cable laid out from Chorrillos and buoyed by ship this morning.
11.30	Shipped a quantity of ice and provisions.
11.57	Captain Hunter, Captain Morton, and Mr. Daley left for shore to send telegram to Silvergray, London, to arrange accounts with Agents and to get ship cleared for Santa Elena.
NOON.	Light S'ly breeze. Fine, but cloudy and hazy. Bar. 30·050 (73° F.). Temp. 67°·2 F. dry, 66°·8 F. wet. Sea surface 66° F. During this morning all cable in tanks has been tested, with satisfactory results.
P.M.	
0.48	Captain Lugar came on board.

HOUR.	Coaling—*contd.*
P.M.	SATURDAY, MARCH 25TH, 1893—*contd.*
1.55	Finished shipping fresh water, having received about 27 tons to-day.
2.8	Mr. J. Bailey, of the West Coastof America Telegraph Co., came on board.
2.30	The Pacific Co.'s Coal Manager came on board.
3.15	Finished shipping coal: 200 tons received to-day, making 1020 tons of coal on board, viz.: about 190 tons in fore hold and 830 tons in bunkers. Draught of ship { Forward 24′ 10″. Aft 29′ 10″.
5.25	Received from Messrs. Shute & Co. 3 coils of $4\frac{1}{2}''$ and 3 coils of 5″ white manilla rope for cable stores, and 1 coil of $4\frac{1}{4}''$ rope for deck stores.
8.0	Light S'ly breeze. Fine, but overcast. Bar. 30·050 (72° F.). Temp. 68°·2 F. dry, 67°·4 F. wet. Sea surface 66°·2 F.
8.33	Mr. Birrell, Assistant Manager of the P.S.N. Co., accompanied by Messrs. Stokes and Bright, visited ship.
10.35	Messrs. Kingsford & J. Rymer-Jones, with Jointer Gowing, returned to ship. Mr. Jones reports tests on the Chorrillos Shore-End very satisfactory.

SOUNDING BETWEEN CHORRILLOS AND SANTA ELENA.

MARCH 26TH TO MARCH 31ST, 1893.

SOUNDING BETWEEN CHORRILLOS AND SANTA ELENA.

S.S. "SILVERTOWN."

HOUR. A.M.	SUNDAY, MARCH 26TH, 1893.
6.0	Hoisted up boats and prepared for sea.
7.0	Weighed anchor and set on to verify position of Buoy 43R on end of Chorrillos Shore-End, and Mark Buoy 42, let go yesterday morning.
8.0	Light S'ly breeze. Fine, but cloudy. Slight S'ly sea. Bar. 30·015 (66° F.). Temp. 66°·2 F. dry, 63°·8 F. wet. Sea surface 65° F. Temp. in cable tanks, bottom of cone: fore tank 67° F., main tank 66° F., after tank 67½° F.
8·55	Position { San Lorenzo Lighthouse bearing N 60° E. Palominos Islands bearing N 85° E. }
10.6	Sighted Buoy 43R.
10.25	Passed Buoy 43R on end of Chorrillos Shore-End.
10.40	Up to Mark Buoy 42, having run 2·4 N.M. on S 80° W course from Cable Buoy 43R. Stopped ship.
10.42	Lowered surf-boat and sent it away to put flag "W" on mark buoy.
10.52	Sounding 9 S { Lat. 12° 17′·1 S Long. 77° 37′·0 W } 449 fms. gn. grit m. Mark buoy bearing N 30° E, 0·5 N.M. distant.
10.58	Set on to pick up surf-boat and to take further soundings round buoys.
11.24	Surf-boat hoisted up. A cage and flag "W" now on Mark Buoy 42.
NOON.	Moderate SSE breeze. Fine, but cloudy and misty. Slight sea and swell from SSE. Bar. 29·960 (71° F.). Temp. 70° F. dry, 68° F. wet. Sea surface 62°·2 F. Position by observations { Lat. 12° 16′ 2 S. Long. 77° 34′·4 W. }

HOUR. P.M.	SUNDAY, MARCH 26TH, 1893—*contd.*
	Buoy 43R on Chorrillos End of cable close by on starboard quarter. All cable in tanks tested, with satisfactory results.
0.14	T. Sounding 10 S { Lat. 12° 16′·6 S, Long. 77° 34′·4 W } 133 fms. grit. { Bottom temp. 54°·4 F. Surface temp. 62°·2 F. } Therm. No. 87859 { Max. 70°·9 F., 8·85 mm. Min. 54°·4 F., 6·92 mm. }
0.18	Set on for Santa Elena, sounding *en route.*
2.40	Sounding 11 S { Lat. 12° 2′·5 S, Long. 77° 49′·0 W } 171 fms. st., and some particles resembling fish bone. Hormigas de Afuera Island bearing N 29° E, 5 N.M. distant. Current observed since noon=N 68° W, 3·1 N.M.=1·3 KTS.
4.0	Light SSE breeze. Fine and clear. Slight sea and swell.
4.50	Sounding 12 S { Lat. 11° 49′·9 S, Long. 77° 57′·6 W } 470 fms. gn. m.
6.0	Temp. in cable tanks, bottom of cone: fore tank 68° F., main tank 67° F., after tank 67½° F.
6.45	Position by stars { Lat. 11° 41′·0 S. Long. 78° 9′ W. Current observed since 2.40 p.m.=N 27° W, 2·5 N.M.=0·6 KT.
6.46	Sounding 13 S { Lat. 11° 41′·0 S, Long. 78° 9′·0 W } 460 fms. f. s.
8.0	Moderate SE wind. Fine, but cloudy. Moderate following sea. Bar. 30·030 (70° F.). Temp. 67°·8 F. dry, 67°·2 F. wet. Sea surface 66° F.
9.27	Sounding 14 S { Lat. 11° 34′·3 S, Long. 78° 28′·4 W } 887 fms. m. and f. s.
MIDNT.	Similar weather.

S.S. "SILVERTOWN."

HOUR.	MONDAY, MARCH 27TH, 1893.
A.M.	
0.46	Sounding 15 S { Lat. 11° 16′·3 S, Long. 78° 41′·1 W } 1169 fms. Lost 1045 fms. of wire and tube.
5.16	Position by stars { Lat. 10° 47′·5 S., Long. 79° 3′·2 W. Current observed since 6.45 p.m. yesterday=S 66° W, 9·3 N.M.=0·9 KT.
5.30	Sounding 16 S { Lat. 10° 47′·5 S, Long. 79° 3′·2 W } 1115 fms. gn. m.
8.0	Light SSE breeze. Fine and clear. Slight sea and swell from SE. Bar. 30·050 (70° F.). Temp. 73° F. dry, 70°·5 F. wet. Sea surface 69°·4 F. Temp. in cable tanks, bottom of cone: fore tank 67½° F., main tank 67° F., after tank 68° F.
10.57	T. Sounding 17 S { Lat. 10° 13′·9 S, Long. 79° 29′·5 W } 1267 fms. gn. m. Bottom temp. 48°·6 F. Surface temp. 69° F. } Therm. No. 87859 { Min. 48°·6 F., 5·25 mm.
NOON.	Moderate SSE breeze. Fine and clear overhead. Misty round horizon. Slight sea. Bar. 30·000 (71° F.). Temp. 75° F. dry, 71°·5 wet. Sea surface 69°·5 F. Position by observations { Lat. 10° 6′·2 S., Long. 79° 30′·5 W. Current observed since 5.16 a.m.=S 44° W, 3·2 N.M.=0·48 KTS. Temp. in cable tanks, bottom of cone: fore tank 67½° F., main tank 67° F., after tank 67½° F. During this morning all cable in tanks tested, with satisfactory results.
P.M	
2.27	Sounding 18 S { Lat. 9° 50′·6 S, Long. 79 37′·3 W } 798 fms. gn. m.
6.0	Temp. in cable tanks, bottom of cone: fore tank 67° F., main tank 67° F., after tank 67½° F.
6.25	Position by stars { Lat. 9° 22′·0 S., Long. 79° 56′·0 W.

S.S. "SILVERTOWN."

HOUR.	
P.M.	MONDAY, MARCH 27TH, 1893—*contd.*
	Current observed since noon = N 53° W, 3·5 N.M. = 0·54 KTS.
8.0	Moderate SSE wind. Fine, bright, and clear. Moderate following sea. Bar. 30·040 (72° F.). Temp. 70°·8 F. dry, 69°·8 F. wet. Sea surface 70°·2 F.
8.59	Sounding 19 S { Lat. 9° 7′·0 S, Long. 80° 4′·9 W } 890 fms. stf. m.
MIDNT.	Similar weather.
	TUESDAY, MARCH 28TH, 1893.
A.M. 1.16	T. Sounding 20 S { Lat. 8° 41′·3 S, Long. 80° 20′·8 W } 872 fms. stf. m. Bottom temp. 48°·4 F.; Surface temp. 70°·5 F. — Therm. No. 87859 { Max. 69°·5 F., 9·42 mm.; Min. 48°·4 F., 5·13 mm. }
4·0	Light SE breeze. Fine and clear.
4.25	Sounding 21 S { Lat. 8° 20′·2 S, Long. 80° 29′·5 W } 584 fms. stf. m.
6.0	At daylight, sky overcast. Stellar observations impracticable.
8.0	Moderate SE breeze. Fine, but overcast. Slight sea from SSE. Bar. 30·100 (72° F.). Temp. 72° F. dry, 70°·5 wet. Sea surface 75°·3 F. Temp. in cable tanks, bottom of cone: fore tank 67½° F., main tank 67° F., after tank 68° F.
8.12	Sounding 22 S { Lat. 7° 59′·7 S, Long. 80° 48′·0 W } 1287 fms. gn. m.
NOON.	Light SE breeze. Fine and clear overhead, but hazy round horizon. Slight swell from SE. Bar. 30·100 (77° F.). Temp. 75° F. dry, 71°·5 F. wet. Sea surface 73° F.

HOUR. P.M.	TUESDAY, MARCH 28TH, 1893—*contd.*
	Position by observations { Lat. 7° 34′·8 S. Long. 81° 6′·6 W. Current observed since 6.25 p.m. yesterday=S 64° W, 11·6 N.M.=0·66 KT. Temp. in cable tanks, bottom of cone: fore tank 68° F., main tank 67½° F., after tank 68° F. During the morning tests taken on all cable in tanks; results satisfactory.
1.54	Current observed since noon=W, 1·3 N.M.=0·7 KTS.
2.47	Sounding 23 S { Lat. 7° 20′·5 S Long. 81° 14′·1 W } 2228 fms. Lost 1718 fms. of wire and tube. NOTE.—Some delay took place in taking this sounding owing to there being insufficient wire on the drum (1976 fms.), necessitating the shipping and splicing on another drum of wire.
4.0	Light SE breeze. Fine and clear.
5.30	Sighted Lobos de Afuera Island bearing N 67° E.
6.0	Temp. in cable tanks, bottom of cone: fore tank 67½° F., main tank 67° F., after tank 68° F.
6.30	Position by stars { Lat. 6° 58′·3 S Long. 80° 57′·3 W } Lobos de Afuera Island bearing N 86° E. Current observed since 1.54 p.m.=S 77° W, 2 N.M.= 0·3 KT.
6.33	Sounding 24 S { Lat. 6° 58′·3 S Long. 80° 57′·3 W } 160 fms. grit.
8.0	Light SE breeze. Fine, bright, and clear. Slight S'ly swell. Bar. 30·100 (74° F.). Temp. 71° F. dry, 71° F. wet. Sea surface 70°·5 F.
8.31	T. Sounding 25 S { Lat. 7° 3′·5 S Long. 81° 8′·3 W } 1047 fms. stf. m. Bottom temp. 43°·2 F. Surface temp. 70°·5 F. } Therm. No. 87859 { Max. not reliable. Min. 43°·2 F., 3·77 mm. No current observed since 6.30 p.m.
9.0	Set on to the N'd, 155 N.M., to run to position of next sounding.

S.S. "SILVERTOWN."

HOUR. A.M.	WEDNESDAY, MARCH 29TH, 1893.
4.0	Light SE breeze. Fine and clear.
5.30	Position by stars { Lat. 5° 53′·3 S. Long. 81° 18′·3 W. Current observed since 8.15 p.m. yesterday=S 48° W, 4 N.M.=0·43 KT.
5.45	Sighted Pisura Point bearing N 82° E.
8.0	Calm. Fine, clear weather. Smooth sea. Bar. 30·150 (72° F.). Temp. 69°·9 F. dry, 69°·4 F. wet. Sea surface 69° F. Bearings { Pisura Point S 49° E. Saddle of Payta N 42° E. Current observed since 5.30 a.m.=S 46° W, 3·0 N.M.= 1·2 KT. Temp. in cable tanks, bottom of cone: fore tank 68° F., main tank 67½° F., after tank 68° F.
10.35	Bearings { Payta Point N 70° E. Saddle Hill N 88° E.
NOON.	Calm. Fine, bright, and clear. Smooth sea, with slight S'ly swell. Bar. 30·100 (72° F.). Temp. 74°·5 F. dry, 72° F. wet. Sea surface 70° F. Position by observations { Lat. 5° 0′·4 S. Long. 81° 34′·5 W. No current observed since 8 a.m. Temp. in cable tanks, bottom of cone: fore tank 68½° F., main tank 68° F., after tank 68½° F. Tests taken on all cable this morning, with satisfactory results.
P.M. 2.31	Sounding 26 S { Lat. 4° 44′·0 S Long. 81° 38′·5 W } 1978 fms. gn. m.
4.0	Light SE breeze. Fine and clear.
4.35	Sounding 27 S { Lat. 4° 35′·5 S Long. 81° 42′·7 W } 2059 fms. gn. m.
5.40	Position by stars { Lat. 4° 31′·0 S. Long. 81° 39′·6 W. No current observed since noon.
6.0	Temp. in cable tanks, bottom of cone: fore tank 68° F., main tank 67½° F., after tank 68½ F.

S.S. "SILVERTOWN."

Hour.	
P.M.	WEDNESDAY, MARCH 29TH, 1893—*contd.*
6.4	Sounding 28 S { Lat. 4° 31′·0 S, Long. 81° 39′·6 W } 1547 fms. gn. m.
6.58	Position by stars { Lat. 4° 30′·5 S. Long. 81° 37′·0 W. No current observed since 5.40 p.m.
7.22	T. Sounding 29 S { Lat. 4° 30′·5 S, Long. 81° 37′·0 W } 1346 fms. gn. m. Bottom temp. 36°·6 F. Surface temp. 67°·0 F. } Therm. No. 87859 { Max. 70°·9 F., 8·83 mm. Min. 36°·6 F., 1·91 mm.
8.0	Light S'ly breeze. Fine, bright, and clear. Calm sea, but slight S'ly swell. Bar. 30·100 (71 F.). Temp. 70° F. dry, 68°·5 wet. Sea surface 67°·8 F.
10.34	T. Sounding 30 S { Lat. 4° 8′·8 S, Long. 81° 33′·3 W } 1336 fms. gn. m. Bottom temp. 36°·3 F. Surface temp. 66°·8 F. } Therm. No. 87859 { Max. 68°·7 F., 8·42 mm. Min. 36°·3 F., 1·87 mm.
MIDNT.	Light S'ly wind. Fine, but overcast. Heavy dew.
	THURSDAY, MARCH 30TH, 1893.
A.M. 1.46	Sounding 31 S { Lat. 3° 50′·7 S, Long. 81° 41′·6 W } 1819 fms. glob. oz.
4.0	Light S'ly wind. Fine and clear. Calm sea, with slight S'ly swell.
4.27	T. Sounding 32 S { Lat. 3° 40′·6 S, Long. 81° 31′·9 W } 952 fms. gn. gt. m. Bottom temp. 38°·2 F. Surface temp. 67°·0 F. } Therm. No. 87859 { Max. 71°·2 F., 8·39 mm. Min. 38·2 F., 2·44 mm.
6.0	No sights obtainable, as sky overcast.

HOUR. A.M.	THURSDAY, MARCH 30TH, 1893—*contd.*
6.15	T. Sounding 33 S { Lat. 3° 34′·5 S Long. 81° 26′·9 W } 917 fms. gn. m. Bottom temp. 39°·5 F. Surface temp. 68°·2 F. } Therm. No. 87859 { Max. 67°·8 F., 8·22 mm. Min. 39°·5 F., 2·70 mm.
8.0	Light S'ly breeze. Fine, but cloudy. Smooth sea. Bar. 30·130 (69° F.). Temp. 70°·2 F. dry, 67°·3 F. wet. Sea surface 68° F. Temp. in cable tanks, bottom of cone: fore tank 67½° F., main tank 67° F., after tank 68° F.
9.12	Sounding 34 S { Lat. 3° 19′·9 S Long. 81° 40′·6 W } 2376 fms. gn. m.
NOON.	Light S'ly breeze. Fine and clear overhead, misty round horizon. Smooth sea. Bar. 30·080 (75° F.). Temp. 75° F. dry, 69°·2 F. wet. Sea surface 71°·2 F. Position by observations { Lat. 3° 0′·2 S. Long. 81° 37′·2 W. Current observed since 6.58 p.m. yesterday=N 53° W, 11·6 N.M.=0·7 KT. Temp. in cable tanks, bottom of cone: fore tank 68° F., main tank 67½° F., after tank 68½° F. During this morning, tests taken on all cable in tanks; results satisfactory.
P.M. 1.43	T. Sounding 35 S { Lat. 2° 55′·1 S Long. 81° 28′·6 W } 1760 fms. gn. m. Bottom temp. 37°·4 F. Surface temp. 72°·0 F. } Therm. No. 87859 { Max. 74°·5 F., 9·56 mm. Min. 37°·4 F., 2·22 mm.
4.32	Sounding 36 S { Lat. 2° 40′·5 S Long. 81° 16′·5 W } 1073 fms. gn. m.
6.0	Temp. in cable tanks, bottom of cone: fore tank 68° F., main tank 67½° F., after tank 69° F.
6.45	Position by stars { Lat. 2° 24′·2 S. Long. 81° 20′·5 W. Current observed since noon=N, 4·7 N.M.=0·7 KT.

S.S. "SILVERTOWN."

HOUR. P.M.	THURSDAY, MARCH 30TH, 1893—*contd.*
6.57	Sounding 37 S { Lat. 2° 24′·2 S, Long. 81° 20′·5 W } 1115 fms. Lost tube.
8.0	Moderate SW breeze. Fine and clear. Slight sea and swell from S'd. Bar. 30·030 (75° F.). Temp. 72°·2 F. dry, 70°·2 F. wet. Sea surface 73° F.
9.1	Sounding 38 S { Lat. 2° 26′·9 S, Long. 81° 27′·4 W } 1919 fms. Lost 1123 fms. of wire and tube.
10.43	Sounding 39 S { Lat. 2° 17′·9 S, Long. 81° 24′·5 W } 1717 fms. gn. m.
11.40	Sighted St. Elena Lighthouse bearing N 82° E.
MIDNT.	Light SW breeze. Fine and clear.
	FRIDAY, MARCH 31ST, 1893.
A.M. 0.41	T. Sounding 40 S { Lat. 2° 9′·7 S, Long. 81° 21′·8 W } 1176 fms. gn. m. Bottom temp. 36°·6 F. Surface temp. 72°·6 F. — Therm. No. 87859 { Max. 70°·8 F., 8·84 mm. Min. 36°·6 F., 1·94 mm. }
1.7	Set on at reduced speed for anchorage in Santa Elena Bay. St. Elena Light bearing S 86° E. Current observed since 6·45 p.m. yesterday=N, 3·5 N.M.= 0·61 KT.
4.0	Light S'ly breeze. Fine and clear.
5.20	Increased engines to full speed.
6.20	St. Elena Lighthouse bearing S, 2·5 N.M. distant.
7.10	Let go starboard anchor in 9¼ fms. in Santa Elena Bay. Draught of ship { Forward 25′ 0″. Aft 29′ 0″. } Position { Cable House bearing S 31° W. Lighthouse " S 77° W. Chepillo Point " S 29° W. }

AT SANTA ELENA.

SOUNDING OFF SANTA ELENA.

S S. "SILVERTOWN."

MARCH 31ST, 1893.

Hour. A.M.	FRIDAY, MARCH 31st, 1893—*contd.*
7.20	Lowered gig, surf-boat, and port cutter, Natives appear to be opening out cable trench in front of Cable Hut.
7.29	Messrs. J. Rymer-Jones and H. Kingsford left for Cable Hut in gig.
7.30	Lowered steam-launch. Commenced loading cutter and surf-boat with electrical stores, provisions, and baggage for the Cable Hut.
8.0	Calm. Fine and clear. Hot and sultry. Bar. 30·100 (76° F.). Temp. 75°·5 F. dry, 73°·2 F. wet. Sea surface 73°·3 F.
8 10	Messrs. J. Schneider and F. W. A. Knight in surf-boat, and Mr. J. F. Lumsden with Jointer Skinner in cutter, left for Cable Hut. Messrs. Schneider and Knight will remain on shore for duty at the Cable Hut during the laying of the Chorrillos—Santa Elena Section.
8.45	Temp. in cable tanks, bottom of cone: fore tank 68½° F., main tank 68° F., after tank 68½° F.
9.50	Put in steam-launch 5 wooden mark buoys, 5 50-lb. sinkers, and 60 fms. of 12-thread rope.
10.0	Capt. Morton and Messrs. Lloyd and Combe left in steam-launch to select and mark with buoys a safe and suitable anchorage for ship to land Shore-Ends here.
10.3	Mr. Lumsden returned with cutter and surf-boat, having landed stores at Cable Hut.
10.55	Mr. J. Rymer-Jones on beach signalled, "Send boat."
11.25	Capt. Morton and Messrs. Lloyd and Combe returned to ship.
11.26	Steam-launch, with gig in tow, left for shore.
11.30	All cable in tanks tested, with satisfactory results.

HOUR. FRIDAY, MARCH 31ST, 1893—*contd.*

NOON. Light W by N breeze. Fine, clear and warm weather.

Bar. 30·080 (78°F.) Temp. 80° F. dry, 75° F. wet. Sea surface 73°·5 F.

Temp. in cable tanks, bottom of cone: fore tank 70° F., main tank 69° F., after tank 70° F.

P.M.

0.15 Steam-launch and gig returned from shore with Messrs. J. Rymer-Jones and H. Kingsford, accompanied by four members of the Central & South American Telegraph Company's staff at Santa Elena station (Messrs. T. J. Stannage, G. D. Hand, J. C. Everett, and J. G. Walsh), Mr. Rymer-Jones bringing off the following information (measurements taken by two of the Central & South American Telegraph Company's staff):—

From brow of hill (position "A") at Chepillo Point to Telegraph Office=246 yds. 2 ft.

From brow of hill (position "A") at Chepillo Point to low water mark=66 yds. 2ft.

From brow of hill (position "A") at Chepillo Point to low water mark opposite Cable Hut=450 yds.

From low water mark to Cable Hut=100 yds.

The Central and South American Telegraph Company are now putting down three new land lines (Deep Sea type) between Cable Hut and Cable Office, length about 340 yds. (depth of trench=3½ ft.), ready for the two new cables to be laid at this station. The trench for Shore-End has not yet been commenced.

Sounding off Santa Elena.

Hoisted up gig and commenced to heave up anchor

0.20 Anchor up. Set on to take soundings to define the 100-fm. line off Santa Elena.

0.27 Steam-launch left to anchor off Cable Hut till ship returns to the anchorage this evening.

1.55	T. Sounding 41 S	Lat. 2° 5′·7 S Long. 81° 5′·5 W	127 fms. gn. m.	
		Bottom temp. 56°·7 F. Surface temp. 73°·5 F.	Therm. No. 87859	Max. 75°·7 F., 9·82 mm. Min. 56°·7 F., 7·50 mm.

Commenced to lower moorings of mark buoy.

Hour. P.M.	
	Sounding off Santa Elena—*contd.*
	FRIDAY, MARCH 31ST, 1893—*contd.*
2.8	Let go mark buoy 62N. Observed current setting to the NE at about 1 KT. Position { White Patch bearing S 63° E. Lighthouse bearing S 49° E, 8·5 N.M. distant. } Lat. 2° 5′·7 S. Long. 81° 5′·5 W. Moorings of buoy:— ½″ bridle. 20 fms. ½″ chain. 100 fms. 3″ × 3″ buoy rope. 23 fms. ,, ,, (side rope). 1 mushroom = 2 cwt. 0 qrs. 5 lbs.
2.26	Set on for position to take further soundings.
2.41	Sounding 42 S { Lat. 2° 6′·0 S Long. 81° 4′·6 W } 120 fms. gn. m. { Lighthouse bearing S 48° E, 8·1 N.M. distant. Mark buoy 62N, bearing N 67° W. }
3.2	Sounding 43 S { Lat. 2° 5′·6 S Long. 81° 4′·9 W } 95 fms. s. & m. { Lighthouse bearing S 47° E. Buoy 62N bearing S 89° W. }
3.21	Sounding 44 S { Lat. 2° 5′·6 S Long. 81° 4′·8 W } 95 fms. m. s. sh. { Lighthouse bearing S 47° E. Buoy 62N bearing W. }
3.59	Sounding 45 S { Lat. 2° 3′·2 S Long. 81° 3′·4 W } 99 fms. grt. & brk. sh.
4.0	Commenced to lower moorings of mark buoy.
4.5	Let go mark buoy No. 61M. Position { Lighthouse bearing S 28° E White Spot bearing S 51° E Buoy 61M in line with buoy 62N, bearing S 39° W } Lat. 2° 3′·2 S. Long. 81° 3′·4 W Moorings of buoy:— ½″ bridle. 20 fms. ½″ chain. 100 fms. 3″ × 3″ buoy rope. 23 fms. ,, ,, (side rope). 1 mushroom = 2 cwt. 0 qrs. 9 lbs.

HOUR. P.M.	**Sounding off Santa Elena**—*contd.*
	FRIDAY, MARCH 31ST, 1893—*contd.*
4.34	Sounding 46 S { Lat. 2° 3′·5 S; Long. 81° 2′·9 W } 66 fms. grt. m. { Lighthouse bearing S 27° E. Mark Buoy 61 M bearing N 33° W. White Spot bearing S $51\frac{1}{2}$° E.
4.58	Sounding 47 S { Lat. 2° 2′·7 S; Long. 81° 2′·7 W } 102 fms. grt. m. { Lighthouse bearing S 24° E. Buoy 61 M bearing S 45° W.
5.5	Set on for anchorage off Cable Hut at Santa Elena.
6.0	Temp. in cable tanks, bottom of cone: fore tank 70° F., main tank $69\frac{1}{2}$° F., after tank $70\frac{1}{2}$° F.
6.45	Steam-launch come alongside and was directed to find and stand by buoy put down this morning to mark ship's anchorage for landing northern Shore-End.
7.10	Let go starboard anchor in $7\frac{1}{2}$ fms.; veered chain to 30 fms. near steam-launch at buoy. Position { Cable Office bearing S 49° W. Lighthouse Hill bearing N 88° W (light obscured).
7.15	Steam-launch came alongside.
7.29	Messrs. Stannage, Hand, Everett, and Walsh, of the Central & South American Telegraph Company, left in gig, in tow of steam-launch, for shore. Mr. Stannage takes a telegram from Capt. Hunter to be forwarded to Silvergray, London.
8.0	Light SSW breeze. Fine and clear. Bar. 30·050 (74°·6 F.). Temp. 73°·6 F. dry, 71°·2 wet. Sea surface 72°·6 F.
8 55	Steam-launch, with gig in tow, returned to ship, bringing on board Mr. E. H. Ripley, Superintendent of the cable office here, and Jointer Skinner.
9.45	Tests taken on Santa Elena Northern Shore-End, piece "C," in main tank, with satisfactory results, and the top end sealed ready for landing to-morrow morning.
MIDNT.	Light W'ly breeze. Fine and clear.

SAN JUAN DEL SUR—SANTA ELENA SECTION.

LANDING AND LAYING SANTA ELENA NORTH SHORE-END.

LAYING SANTA ELENA NORTH HEAVY AND LIGHT INTERMEDIATES.

BUOYING THE LIGHT INTERMEDIATE.

April 1st, 1893.

F

Hour. A.M.	**Landing Santa Elena North Shore-End.**
	SATURDAY, APRIL 1st, 1893.
4.0	Light W'ly breeze. Fine and clear. Slight swell setting into the bay.
6.17	Captain Morton and Mr. Combe (Navigating Officer) left in steam-launch to sound to shoreward of ship, to see if it is possible to move ship nearer shore with safety.
6.25	Commenced loading surf-boat with two spider wheels, two sand anchors, chain, ropes, tools, and all gear required on the beach for the landing of Shore-End cable.
6.36	Messrs. P. Bates, S. C. Mote, and C. H. L. Cazalet with Tillyer (Foreman's mate), Skinner (Jointer), and five cable hands left in surf-boat, containing Shore-End landing gear, for the beach in front of cable hut, Mr. Ripley, of the C. and S.A. Tel. Co., also left ship.
6.46	Commenced coiling hauling-off ropes in cutters.
6.56	Captain Morton and Mr. Combe returned to ship, having found an anchorage in 7¼ fms. about two cables length nearer to shore.
7.10	Commenced to heave up anchor.
7.25	Anchor up. Set on slow to anchor nearer beach.
7.30	Surf-boat returned from the beach. Tests taken on the spliced sections of Shore-End, Heavy Intermediate and Light Intermediate, piece "C" in main tank, now about to be laid; results satisfactory.
7.44	Let go starboard anchor in 6¾ fms., veered chain to 30 fms. Soundings round ship: forward, 6¾ fms.; amidships, 7 fms.; aft, 7¼ fms.
8.0	Calm. Fine and clear. Weather sultry. Slight swell. Bar. 30·050 (75° F.). Temp. 76°·5 F. dry, 73°·5 F. wet, Sea surface 73° F. Temp. in cable tanks, bottom of cone: fore tank 69½° F. main tank 69° F., after tank 70° F.
8.20	Finished coiling hauling-off ropes in starboard cutter, viz.: 5 coils 4″ white, 1 coil 4″ tarred, 1 coil 4½″ tarred, and 3 coils of 4½″ white manilla rope.

Hour. A.M.	Landing Santa Elena North Shore-End—*contd.* SATURDAY, APRIL 1st, 1893—*contd.*
8.36	Finished coiling hauling-off ropes in port cutter, viz.: 7 coils $4\frac{1}{2}''$ white and 3 coils of $5''$ white manilla rope.
9.10	Both cutters containing ropes for hauling-off lines, endless messenger, left in tow of steam-launch for the beach.
9.15	Cable hands on the beach are apparently digging trench for end of cable when landed. As the sun heats the sand on the beach considerably, instructions have been sent ashore to Mr. Bates to pour water over the sand in the trench before laying cable in it.
9.28	Observed port cutter land end of rope on the beach and start back in tow of steam-launch for the ship, paying out line on the way.
9.36	Observed native labourers assisting cable hands on the beach to open cable trench.
9.50	Hauled top end of Shore-End cable, No. 1953B, pt. Sec. "3B," piece "C," in main tank, along leads on main deck and three times round paying-out drum to stern sheave.
9.52	Port cutter arrived at ship's stern and passed end of eighth rope from the beach inboard over stern sheave.
9.59	Bent 35 fms. of $4\frac{1}{2}''$ rope on to 2 fms. of the end of rope running from the beach to stern sheave and stoppered it along cable, making 37 fms. of rope stoppered on cable. Steam-launch and dingey left to pick up the three small wooden mark buoys put down yesterday to mark anchorage for ship. Seamen getting on board the two remaining coils of rope in port cutter.
10.12	Steam-launch and dingey now proceeding towards the beach.
10.26	End of rope from starboard cutter landed, and shackled on to the rope landed by port cutter on the beach. Cutter now started in tow of steam-launch for ship, paying out line on the way.
10.38	"All ready" signal hoisted on the beach.

HOUR. A.M.	**Landing Santa Elena North Shore-End**—*contd.* SATURDAY, APRIL 1ST, 1893—*contd.*
10.50	Mr. Mote returned in steam-launch with starboard cutter and dingey in tow. End of the 9th rope from cutter passed inboard over port quarter and shackled on to a rope leading from port picking-up drum, thus completing endless messenger between ship and shore.
10.56	Commenced heaving in on messenger with port picking-up drum. Ship's stern now swung round towards cable hut.
11.0	Veered away on starboard anchor chain to 45 fms.
11.3	End of Shore-End cable passed over ship's stern with 1st balloon buoy attached.
11.7	Rope forming messenger foul of its own bight near cable end. Stopped heaving in on messenger and paying out cable. Sent surf-boat away to underrun and clear ropes.
11.24	Ropes now clear. Resumed heaving in on messenger.
11.27	Hailed surf-boat and told them to let go rope. Depth at stern of ship=6 fms. Tide rising.
11.29	Resumed paying out cable.
11.38	Sent surf-boat away to follow end of cable ashore, to see that it runs clear of the bottom and rope forming messenger. Tide coming into the bay and setting messenger over cable.
11.39	Connection of rope foul of rope on Cable End. Stopped heaving in on messenger and paying out cable. Surf-boat started to clear messenger again.
11.45	Shore signalled, "Send twelve men ashore to dig trench."
11.46	Surf-boat underrunning messenger, which appears to be clear. Resumed heaving in on messenger and paying out cable.
11.47	Surf-boat ceased underrunning messenger.
11.48	Capt. Morton and Messrs. Lloyd and Combe left in steam-launch to put down a mark (torpedo) buoy with red flag in $6\frac{1}{2}$ fms. to mark the Shore-End of the existing Santa Elena—Buenaventura Section, as it is arranged that the southern

HOUR. A.M.	**Landing Santa Elena North Shore-End**—*contd.*
	SATURDAY, APRIL 1ST, 1893—*conta.*
	Shore-End to be landed here to-morrow is to be laid between this northern cable the ship is now landing, and the northernmost cable already laid here.
11.58	Surf-boat now following Cable End ashore to see that it runs clear of messenger.
NOON.	Calm. Fine, bright, and clear. Bar. 30·030 (76° F.). Temp. 80° F. dry, 76·2° F. wet. Sea surface 75·8° F. Temperature in cable tanks, bottom of cone: fore tank 71° F., main tank $70\frac{1}{2}$° F., after tank $71\frac{1}{2}$° F.
P.M. 0.20	As the attention of those on shore cannot be attracted by hand signal flag, sent steam-launch and dingey ashore to ask Mr. Bates what labour he has there (*see* message at 11.45 a.m.).
0.38	Signalled to surf-boat to return to ship. Cable and rope, forming messenger, now running free; tide setting bight of the cable to the northward a little.
0.45	Depth at stern of ship=38 feet. Lowered thermometer to within 2 ft. of the bottom and found the temp.=69°·3 F.
0.48	Steam-launch returned with surf-boat and dingey in tow.
1.0	Mr. S. C. Mote to take photograph of cable line between ship and shore, and 10 seamen to assist in the digging of cable trench left in steam-launch for shore.
1.25	Veered bower chain to 90 fms.
1.28	All available balloon buoys (54) now on cable; tried buoying up bight of cable with empty beer casks, but as they failed, sent surf-boat and one of the cutters to hold up cable.
1.31	End of cable reached beach. 1·147 N.M. of Shore-End cable paid out from ship to beach, but cable takes a bend to the northward about midway between ship and shore.
1.42	Shore hoisted danger signal. Stopped paying out on cable and heaving in on the messenger.

HOUR. P.M.	**Landing Santa Elena North Shore-End**—*contd.*
	SATURDAY, APRIL 1ST, 1893—*contd.*
1.44	Shore signalled, "Enough cable on shore." 1·186 N.M. of Shore-End cable paid out from ship to Cable Hut − 1·147 N.M. = 0·039 N.M. of Shore-End cable on the beach. Position of ship: Rocky Point and Cable House < 50° 53′. Left tangent of Lighthouse Hill and Cable House < 44° 44′ 30″. Left tangent of Lighthouse Hill bearing W. Cable Office bearing S 44½° W. Rocky Point bearing S 6° E. Lat. 2° 11′·15 S. Long. 80° 57′·0 W. Distance from ship to spider wheel opposite Cable Hut by masthead angle (1° 30′) = 1·16 N.M. Distance from spider wheel at high water mark to Cable Hut = 215 ft. Distance between spider wheels = 300 ft.
1.57	Shore signalled, "Heave in line."
2.20	Shore signalled, "Please send boat."
2.26	Capt. Hunter, Mr. H. Kingsford, and Mr. R. G. Wood left for shore in steam-launch with dingey in tow. Commenced to take balloon buoys off cable between ship and shore.
2.35	Observed hands on the beach pouring water over the cable in the trench.
2.50	Hands on the beach appear to be running cable up to Cable Hut.
3.36	End of messenger came inboard with 5 balloon buoys attached.
3.37	Commenced to heave in on anchor chain, and paying out on cable as necessary as ship moves up to anchor.
3.53	30 fms. of chain on starboard anchor now outboard, stopped heaving in on it. Ceased paying out cable.
4.0	Observed steam-launch and boats returning from shore to ship.

Hour. P.M.	**Landing Santa Elena North Shore-End**—*contd.*
	SATURDAY, APRIL 1st, 1893.—*contd.*
4.28	Capt. Hunter and Messrs. Kingsford, Bates, Mote, Wood, and Cazalet, and Dr. Toms, with the seamen and cable hands that have been working on the beach to-day, returned to ship in steam-launch, which has both cutters, surf-boat, dingey, and 49 balloon buoys in tow. Messrs. Schneider and Knight, with Jointer Skinner, remaining on shore. All the Shore-End landing gear has been left on the beach ready for use to-morrow. The end of the cable has been run up into Cable Hut, with seal on the end, and all cable on the beach buried in a 4-feet trench. Capt. Hunter has arranged for a gang of native labourers to open up another trench to-night (as close to the trench dug to-day as is practicable without disturbing this Shore-End) ready for the southern Shore-End, which is to be landed to-morrow.
4.32	Hoisted up surf-boat, and set about getting balloon buoys on board.
4.58	Commenced to heave up anchor.
	Laying the Santa Elena North Shore-End.
5.0	Commenced to pay out on cable according to strain. Steam-launch, with two cutters and dingey, to remain at this anchorage for the present. When dusk steam-launch to place a cutter, with lamp, at mark buoy put down this morning to mark the Shore-End of the Santa Elena—Buenaventura Section, and to place the second cutter, with lamp, at a mark buoy which ship will let go on getting underweigh. These lights will enable ship to anchor this evening in a position between the Shore-End laid to-day and the old northern Shore-End above named, ready for landing the Shore-End of the Santa Elena—Chorrillos Section to-morrow.
5.12	Anchor at bows. Set on easy ahead=18 revs. per minute. Weight on brake levers=1380 lbs. (20 weights).
5.13	Let go torpedo buoy, No. 80, with blue flag, moored with 15 fms. of $\frac{1}{4}$-in. chain and 2 50-lb. sinkers, as a mark buoy for the cable now being laid.
5.15	Increased ship's engines to 22 revs. per minute. Ship steering N 47° E, by bearings of land.

HOUR. P.M.

Laying Santa Elena North Shore-End—*contd.*

SATURDAY, APRIL 1st, 1893—*contd.*

5.17 Increased ship's engines to 25 revs. per minute.

5.30 2·221 N.M. of Shore-End, No. 1953B, pt. Sec. "3B," paid out from main tank, minus 1·186 N.M. = 1·035 N.M. of cable paid out from anchorage.

Depth = 9 fms.

TOTAL CABLE LAID FROM SANTA ELENA HUT = 2·221 N.M.

Drum = $24\frac{1}{2}$ revs. per min. = 4·5 KTS. appx. Ship's engines = 27 revs. per min. Weight on brake levers = 1380 lbs. Dynamometer = 17 cwt. Strophometer = 21 revs.

Ship now making a curve round from N 47° E to N $40\frac{1}{2}$° W. Lighthouse bearing S 73° W, 2·6 N.M. distant.

COURSE MADE GOOD FROM ANCHORAGE = N 47° E.

CABLE, BY INDICATOR, PAID OUT ON N 47° E COURSE = 1·035 N.M.

DISTANCE, BY CHART, OVERGROUND, ON N 47° E COURSE = 1·0 N.M.

SLACK = 3·5%.

Position { Lat. 2° 10′·5 S.
Long. 80° 56′·3 W.

5.41 Ship on Course N $40\frac{1}{2}$° W.

3·006 N.M. of Shore-End, No. 1953B, pt. Sec. "3B," paid out from main tank, and laid from Santa Elena Hut.

1·820 N.M. of cable paid out from anchorage.

Depth = 9 fms.

CABLE, BY INDICATOR, PAID OUT ON CURVE = 0·785 N.M.

DISTANCE, BY CHART, OVERGROUND, ON CURVE = 0·750 N.M.

SLACK = 4·7%.

Lighthouse bearing S 61° W, 3·1 N.M. distant.

Position { Lat. 2° 9′·8 S
Long. 80° 56′·2 W.

6.0 TOTAL CABLE LAID FROM SANTA ELENA HUT = 4·389 N.M.

3·203 N.M. of cable paid out from anchorage. Patent log = 1·2 N.M.

Depth = 12 fms.

Drum = 26 revs. per min. = 4·6 KTS. appx. Ship's engines = 26 revs. per min. Weight on brake levers = 1380 lbs. Dynamometer = 17 cwt. Strophometer = 22 revs. Lighthouse bearing S 34° W.

6.15 Temp. in cable tanks, bottom of cone: fore-tank $70\frac{1}{2}$° F., main tank 70° F., after tank 71° F.

HOUR. P.M.	**Laying Santa Elena North Shore-End**—*contd.* SATURDAY, APRIL 1ST, 1893—*contd.*
6.30	6·605 N.M. of Shore-End, No. 1953B, pt. Sec. 3B, paid out from main tank, and laid from Santa Elena Hut, minus 1·186 N.M.=5·419 N.M. of cable paid out from anchorage. Patent log=3·1 N.M. Depth=18 fms. Drum=24½ revs. per min.=4·3 KTS. Ship's engines=26 revs. per min. Weight on brake levers=1380 lbs. Dynamometer=17 cwt. Strophometer=21 to 25 revs.
	Laying Santa Elena North Heavy Intermediate.
6.36	SPLICE between Shore-End, No. 1953B, pt. Sec. "3B," and Heavy Intermediate, No. 1952, pt. Sec. "3," from main tank, passed off drum. 7·042 N.M. of Shore-End, No. 1953B, pt. Sec. "3B," paid out from main tank. Patent log=3·4 N.M. Depth=18 fms. Length by Factory measurement of Shore-End, No. 1953B, pt. Sec. "3B" .. .. =7·000 N.M. Length by Drum measurement of Shore-End, No. 1953B, pt. Sec. "3B," .. .. .. =7·042 „ Difference.. .. =0·042 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=7·000 N.M. 5·814 N.M. OF CABLE LAID FROM ANCHORAGE. Lighthouse bearing S 3° W, 4·5 N.M. distant. Position of splice { Lat. 2° 6′·7 S. Long. 80° 58′·7 W.
6.50	Slowed ship's engines to 20 revs. per min.
6.55	Tests on cable now being laid very satisfactory, the end of the Light Intermediate in main tank handed over to jointer to seal.
	Laying Santa Elena North Light Intermediate.
7.5	SPLICE between Heavy Intermediate, No. 1952, pt. Sec. "3," and Light Intermediate, No. 1951, pt. Sec. 2, from main tank, passed off drum. 2·016 N.M. of Heavy Intermediate, No. 1952, pt. Sec. "3," paid out from main tank. Patent log=5·0 N.M. Depth=26 fms.

HOUR. P.M.	**Laying Santa Elena North Light Intermediate**—*contd.*
	SATURDAY, APRIL 1ST, 1893—*contd.*
	Length by Factory measurement of Heavy Intermediate, No. 1952, pt. Sec. "3" .. .. =1·990 N.M. Length by Drum measurement of Heavy Intermediate, No. 1952, pt. Sec. "3" .. .. =2·016 „ Difference.. .. =0·026 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=8·990 N.M. Lighthouse bearing S 11° E. Position of splice { Lat. 2° 5′·2 S. Long. 81° 0′·0 W.
7.8	Decreased ship's engines to dead slow=about 18 revs. per min.
7.11	Stopped ship's engines. Approaching end of cable in main tank.
7.17	Moving engines as required to ease out cable.
7.22	Cable running out slowly to strain=5 to 16 cwt. Patent log=5·4 N.M.
7.40	Put engine of paying-out machine in gear, and paid out on cable.
7.42	Bent port-quarter line on to cable on stern baulks, and paid out to it with engine.
7.43	End of Light Intermediate, No. 1951, pt. Sec. 2 (end of piece "C," from main tank) passed off drum. 0·990 N.M. of Light Intermediate, No. 1951, pt. Sec. 2, paid out from main tank. Length by Factory measurement .. .. =0·990 N.M. Length by Drum measurement .. .. =0·990 „ Difference.. .. = Nil. TOTAL CABLE LAID FROM SANTA ELENA HUT=9·980 N.M., VIZ.:—

HOUR. P.M.	**Buoying Santa Elena North Light Intermediate.**
	SATURDAY, APRIL 1st, 1893—*contd.*
	Shore-End, No. 1953B, pt. Sec. "3B".. =7·000 N.M. Heavy Intermediate, No. 1952, pt. Sec. "3"=1·990 „ Light Intermediate, No. 1951, pt. Sec. "2"=0·990 „ } Piece 3 or "C" from main tank. Total=9·980 N.M. (=9·968 N.M. corrected to 7.28 p.m., 16.4.93). CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, N 40½° W (MADE GOOD N 39° W)=6·974 (6·962 N.M. CORRECTED TO 7.28 P.M., 16.4.93) N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 40½° W=6·700 N.M. SLACK=3·9°/ₒ.
7.44	Set about bending mooring chain of buoy on to end of cable on stern baulks. Sounded in 29½ fms.
7.52	Let go end of cable attached to buoy 52B. Lighthouse bearing S 13° E, 6·7 N.M. distant. Position { Lat. 2° 4′·6 S. / Long. 81° 0′·35 W. Moorings of buoy:— 1 ⅝″ bridle. 1 20-fm. length ⅝″ chain 2 10 „ lengths ⅝″ „ 1 10 „ length ⅝″ „ stray. 1 5 „ „ ⅝″ „ „ 1 mushroom=4 cwt. 1 qr. 16 lbs.
7.55	Set on for anchorage off Santa Elena Cable Hut.
8.0	Light W'ly breeze. Fine, but cloudy. Smooth sea. Bar. 29·984 (73° F.). Temp. 74°·5 F. dry, 72°·0 F. wet. Sea surface 72°·5 F.
8.45	Tests taken on the spliced sections of Shore-End, Heavy Intermediate, Light Intermediate, and Light Deep Sea cable (piece "B") in after tank by Mr. J. Rymer-Jones, in the presence of Mr. Kingsford, with satisfactory resuls. This cable to be used to complete the Santa Elena—Chorrillos Section.

S.S. "SILVERTOWN."

HOUR. P.M.	**Buoying Santa Elena North Light Intermediate—** *contd.*
	SATURDAY, APRIL 1st, 1893—*contd.*
9.36	Let go starboard anchor in 6½ fms. of water; veered chain to 45 fms. Position { Tuft on Lighthouse Hill bearing S 80° W. Cable Office bearing S 19° W.
9.47	Steam-launch came alongside, but left at once to bring boats back to ship.
10.10	Steam-launch returned with both cutters and dingey in tow. Boats made fast to boom for the night. Top end of the Shore-End cable in after tank sealed, ready for landing to-morrow.

LAYING THE SANTA ELENA—CHORRILLOS SECTION.

LANDING AND LAYING THE SANTA ELENA SOUTH SHORE-END.

LAYING THE SANTA ELENA SOUTH HEAVY INTERMEDIATE.

LAYING THE SANTA ELENA SOUTH LIGHT INTERMEDIATE.

PAYING OUT MAIN CABLE FROM SANTA ELENA TO BUOY ON CHORRILLOS END.

COMPLETION OF SECTION.

April 2nd to April 7th, 1893.

SANTA ELENA—CHORRILLOS SECTION.

S.S. "SILVERTOWN."

Hour. A.M.	Landing the Santa Elena South Shore-End.
	SUNDAY, APRIL 2ND, 1893.
4.0	Light WSW breeze. Fine, but overcast. Smooth sea.
5.50	Cable hands turned to and commenced coiling hauling-off ropes in cutters and fitting slips to balloon-buoys ready for use, in landing the Southern Shore-End.
6.15	Weighed anchor and set on for position about 2 cables length nearer shore, and about midway between the buoys put down yesterday to mark the Shore-End of the Santa Elena—Buenaventura Section and the Shore-End laid by ship yestesday.
6.35	Let go starboard anchor in 7¼ fms., veered chain to 30 fms.
7.12	Mr. Combe left in steam-launch to take soundings to shoreward of ship.
7.16	Finished coiling hauling lines in cutters, viz.: 5 coils of 4½″ and 3 coils of 5″ in starboard cutter, and 5 coils of 4″ and 3 coils of 4½″ in port cutter.
7.32	Mr. Combe returned to ship, having sounded and found sufficient water for ship to swing nearer beach.
7.50	Messrs. P. Bates, J. Rymer-Jones, and A. Fletcher, with Tillyer (Foreman's mate), and 5 cable hands left in steam-launch for shore, taking cutters, containing hauling lines, and dingey in tow.
8.0	Light WSW airs. Fine, but cloudy. Bar. 30·120 (74° F.). Temp. 73°·3 F. dry, 71°·0 F. wet. Sea surface 72°·5 F.
8.15	Observed a gang of native labourers digging trench on the beach for Shore-End.

Hour. A.M.	**Landing the Santa Elena South Shore-End**—*contd.*
	SUNDAY, APRIL 2ND, 1893—*contd.*
8.29	Observed port cutter land end of rope on the beach and start back in tow of steam-launch for ship, paying out rope on the way.
8.38	Port cutter arrived at ship's stern and passed end of 8th rope running from the beach inboard, over port quarter, and along main deck to port picking-up drum.
8.40	Hauled top end of Shore-End cable, No. 1953B, pt. Sec. "3B" (piece B), in after tank up on deck, and three times round paying-out drum to stern baulks.
8.50	Observed end of hauling-off rope landed from starboard cutter and shackled on to the end landed by port cutter, and hands on shore shifting one of the spider wheels.
9.0	Starboard cutter and dingey in tow of steam-launch, left the beach for ship, paying out rope on the way. Temp. in cable tanks, bottom of cone: fore tank $71\frac{1}{2}$° F., main tank 71° F., after tank 72° F.
9.10	"All ready" signal hoisted on the beach.
9.18	Starboard cutter arrived at ship's stern and passed end of 7th rope inboard over stern sheave, thus completing endless messenger (15 ropes), between ship and shore.
9.25	Bent end of messenger on to end of Shore-End cable on stern baulks.
9.26	Steam-launch picked up the torpedo buoy with red flag, which was put down yesterday to mark the Shore-End of the Santa Elena—Buenaventura Section.
9.31	Commenced to heave in on messenger with port picking-up drum.
9.45	Ship now swung round, stern towards cable hut. Depth at stern of ship$=6\frac{1}{2}$ fms.
9.50	End of Shore-End cable passed over stern sheave with 1st balloon buoy attached.
10.24	Shore signalled, "Please send steam-launch with dingey."

HOUR. A.M.

Landing the Santa Elena South Shore-End—*contd.*

SUNDAY, APRIL 2ND, 1893—*contd.*

10.28 Captain Hunter and Mr. Kingsford left in steam-launch with dingey in tow for shore.

10.52 1st balloon buoy on beach. End of cable on shore.

0.919 N.M. of Shore-End cable, No. 1953B, pt. Sec. "3B," paid out from ship to beach

Temp. at bottom, depth 6½ fms.=70°·5 F.

10.58 Shore signalled, "Enough cable on shore." Stopped heaving in on messenger and paying out cable.

1·006 N.M. of Shore-End cable paid out from after tank minus 0·919 N.M.=0·087 N.M. of cable on beach, to reach cable hut. 49 balloon buoys on cable.

Position of ship:
- Cable Office and left tangent of Lighthouse Hill < 60° 0′.
- Cable Office and Rocky Point < 56° 16′.
- Jacinto Point and Rocky Point < 17° 55′.
- Left tangent of Lighthouse Hill vertical angle 2° 6′=1·5 N.M.
- Left tangent of Lighthouse Hill bearing N 89° W.
- Cable Office bearing S 32° W.
- Rocky Point bearing S 24° E.
- Jacinto Point bearing S 43° E.

Lat. 2° 11′·2 S.

Long. 80° 57′·5 W.

Distance by chart from ship to cable hut=0·9 N.M.

11.10 Shore signalled, "Take off balloons." Port and starboard cutters, surf-boat and gig left ship to cast balloon buoys off cable.

11.20 While going ashore this morning Mr. Rymer-Jones took the following temperatures:—

At 5 fms. depth=71¼° F., at water's edge=72·°2 F.

It is arranged that when the cable is laid in trench on beach, and instructions are given to cut the seal, the cable end will be permanently jointed to landline cable in Cable Hut, and shore will speak ship through the landline and cable from Cable Office.

This morning, according to Mr. Rymer-Jones' instructions, a two-fathom length of $\frac{107}{140}$ core has been jointed on to the end of the northern Shore-End (landed yesterday) in the

HOUR. A.M.	**Landing the Santa Elena South Shore-End**—*contd.*
	SUNDAY, APRIL 2ND, 1893—*contd.*
	hut, so as to give plenty of cable for use in the hut, viz., 2½ fms.
11.30	Steam-launch left to pick up balloon buoys.
11.35	Signalled to shore, "Can we heave in line?"; shore replied, "Yes."
	Laying the Santa Elena South Shore-End.
11.37	Resumed heaving in on messenger.
11.54	Steam-launch and port cutter with 27 balloon buoys came alongside.
NOON.	Light SW airs. Fine, but cloudy. Warm and sultry. Smooth sea. Bar. 30·080 (75° F.). Temp. 79° F. dry, 74°·2 F. wet. Sea surface 75° F. Temp. in cable tanks, bottom of cone: fore tank 72° F., main tank 71° F., after tank 72° F.
P.M. 0.17	Steam-launch left for shore with all visitors and sundry provisions for cable hut.
0.37	End of rope which formed messenger came inboard. Hoisted up port cutter.
0.38	Surf-boat came alongside with 12 balloon buoys.
0.40	Gig came alongside with the remainder of balloon buoys (10).
0.43	Signalled to shore, "Cut seal, make joint; when finished call ship on mirror." Shore replied, "Making joint." Natives on beach filling in cable trench, and cable hands putting spider wheels and other gear, that has been in use on the beach, in starboard cutter.
1.6	Shore signalled, "Look out for call on mirror fifteen minutes."
1.30	Clocks put on ten minutes, equal to about half the difference in time between this and Callao, for cable time.

Hour. P.M.	
	Laying the Santa Elena South Shore-End—*contd.*
	SUNDAY, APRIL 2ND, 1893—*contd.*
1.52	Spoke shore on mirror instrument. Put another turn of cable round drum, making 4 in all.
2.14	Steam-launch, with cutter and dingey in tow, came alongside, bringing on board Capt. Hunter, and Messrs. Bates, Kingsford, and Fletcher, with Jointer Skinner, Tillyer (Foreman's mate), and the cable hands who have been working on the beach. All spider wheels, sand anchors, chain, and other gear that has been in use on the beach brought on board. The Shore-End landed to-day has been run into cable hut (about 3 fms. of the end in hut), and the cable on the beach well buried in a trench (close alongside the trench which contains the Shore-End landed yesterday) of about 4 ft. in depth to water's edge. Set about getting gear on board and hoisting up all boats, &c., ready for putting to sea.
3.2	Commenced to heave up anchor. Draught of ship { Forward 24′ 10″. Aft 28′ 8″.
3.4	Put engine of paying-out machine out of gear. Weight on brake levers=1395 lbs. (20 weights).
3.9	Dynamometer=40 cwt. (using scale which allows for 100 lbs. in counterpoise box). Cable started running out slowly to strain.
3.12	Anchor aweigh. Set on slow ahead. Course N 32° E.
3.16	Anchor at bows.
	Laying the Santa Elena South Intermediates.
3.18	Increased ship's engines to 25 revs. per min.
3.30	1·820 N.M. of Shore-End, No. 1953B, pt. Sec. "3B," paid out from after tank. 1·006 N.M.=0·814 N.M. of cable laid from anchorage. Patent log=0·6 N M. TOTAL CABLE LAID FROM SANTA ELENA HUT=1·820 N.M. Depth=9 fms.

HOUR. P.M.	**Laying the Santa Elena South Intermediates**—*contd.*
	SUNDAY, APRIL 2ND, 1893—*contd.*
	Drum=$22\frac{1}{2}$ revs. per min.=3·8 KTS. appx. Ship's engines=25 revs. per min. Weight on break levers=1395 lbs. Dynamometer=16 cwt. Strophometer=20 to 22 revs.
3.45	2·913 N.M. of Shore-End, No. 1953B, pt. Sec. "3B," paid out from after tank, and laid from Santa Elena Hut, minus 1·006 N.M.=1·907 N.M. of cable laid from anchorage Patent log=1·7 N.M. Depth=10 fms. CHANGED COURSE TO N 60° W. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 32° E =1·907 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 32° E=1·850 N.M. SLACK=3·0°/₀. Lighthouse bearing S 49° W. Cable House bearing S 14° W. Position { Lat. 2° 9'·5 S. / Long. 80° 57'·4 W.
4.0	Light SW by W airs. Fine and bright, but cloudy. Slight SW swell. Bar. 29·980 (76° F.). Temp. 79° F. dry, 75° F. wet. Sea surface 74° F. 3·973 N.M. of Shore-End, No. 1953B, pt. Sec. "3B," paid out from after tank. Patent log=2·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=3·973 N.M. Depth=12 fms. Drum=25 revs. per min.=4·4 KTS. Ship's engines=25 revs. per min. Weight on brake levers=1395 lbs. Dynamometer=15 to 13 cwt. Strophometer=21 to 23 revs.
	Laying the Santa Elena South Heavy Intermediate.
4.28	SPLICE between Shore-End, No. 1953B, pt. Sec. "3B," and Heavy Intermediate, No. 1952, pt. Sec. "3," from after tank, passed off drum. 6·048 N.M. of Shore-End, No. 1953B, pt. Sec. "3B," paid out from after tank. Patent log=4·7 N.M.

Hour. P.M.	
	Laying the Santa Elena South Heavy Intermediate —*contd.*
	SUNDAY, APRIL 2ND, 1893—*contd.*
	Length by Factory measurement .. .. =6·000 N.M.
	Length by Drum measurement .. .. =6·048 "
	Difference .. .. .. =0·048 N.M.
	TOTAL CABLE LAID FROM SANTA ELENA HUT=6·000 N.M.
	Depth=18 fms.
	Lighthouse bearing S 13° E.
	Cable House bearing S 24½° E.
	Position of splice { Lat. 2° 8′·1 S. Long. 80° 59′·9 W.
	Strain fell to 8½ cwt. on splice passing out.
	CHANGED COURSE TO N 67° W.
	CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, N 60° W=3·087 N.M.
	DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 60° W=2·900 N.M.
	SLACK=6·4°/。.
4.30	0·143 N.M. of Heavy Intermediate, No. 1952, pt. Sec. "3, paid out from after tank. Patent log=4·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=6·143 N.M. Depth=18 fms. Drum=26 revs. per min.=4·5 KTS. Ship's engines=25 revs. per min. Weight on brake levers=1395 lbs. Dynamometer=8½ cwt. Strophometer=22 to 25 revs.
5.0	2·505 N.M. of Heavy Intermediate, No. 1952, pt. Sec. "3," paid out from after tank. Patent log=6·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=8·505 N.M. Depth=26 fms. Drum=27 revs. per min.=4·5 KTS. Ship's engines=26 revs. per min. Weight on brake levers=1395 lbs. Dynamometer=8 cwt. Strophometer=22 to 27 revs.
	Laying the Santa Elena South Light Intermediate.
5.13	SPLICE between Heavy Intermediate, No. 1952, pt. Sec. "3," and Light Intermediate, No. 1951, pt. Sec. "2," from after tank, passed off drum.

Hour. P.M.	**Laying the Santa Elena South Light Intermediate—** *contd.*
	SUNDAY, APRIL 2ND, 1893—*contd.*
	3·492 N.M. of Heavy Intermediate, No. 1952, pt. Sec. "3," paid out from after tank. Patent log=7·6 N.M. Length by Factory measurement .. .. =3·490 N.M. Length by Drum measurement .. .. =3·492 ,, Difference .. .. .. =0·002 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=9·490 N.M. Depth=35 fms. CHANGED COURSE TO N 80° W. CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, N 67° W (MADE GOOD N 67° W)=3·490 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 67° W=3·350 N.M. SLACK=4·2°/ₒ. Lighthouse bearing S 43° E. White Patch bearing S 65½° E. Position of splice { Lat. 2° 6′·7 S. Long. 81° 2′·95 W.
5.30	1·413 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from after tank. Patent log=8·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=10·903 N.M. Depth=90 fms. Drum=27½ revs. per min.=4·8 KTS. Ship's engines=26 revs. per min. Weight on brake levers=1395 lbs. Dynamometer=5¾ cwt. Strophometer=28 revs.
	Paying out Light Deep Sea.
5.37	SPLICE between Light Intermediate, No. 1951, pt. Sec. "2," and Light Deep Sea, No. 1235, pt. Sec. "10," from after tank passed off drum. 1·969 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from after tank. Patent log=9·3 N.M. Length by Factory measurement of Light Intermediate .. .. =1·990 N.M. Length by Drum measurement of Light Intermediate .. .. =1·969 N.M. Difference .. .. =0·021 N.M.

Hour. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End.**
	SUNDAY, APRIL 2ND, 1893—*contd.*
	TOTAL CABLE LAID FROM SANTA ELENA HUT=11·480 N.M. Depth=120 fms. CHANGED COURSE TO S 83° W. CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, N 80° W (MADE GOOD N 80° W)=1·990 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 80° W=1·850 N.M. SLACK=7·5°/。. Mark Buoy 62N bearing N 43° W. Position of splice {Lat. 2° 6′·3 S. Long. 81° 4′·8 W.
6.0	1·768 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=10·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=13·248 N.M. Depth=200 fms. Drum=27½ revs. per min.=4·8 KTS. Ship's engines=26 revs. per min. Weight on brake levers=1395 lbs. Dynamometer=4½ cwt. Strophometer=23 to 27 revs.
6.30	4·001 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=12·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=15·481 N.M. DEPTH=300 fms. Drum=25½ revs. per min.=4·48 KTS. Ship's engines=25½ revs. per min. Weight on brake levers=1395 lbs. Dynamometer=4¾ cwt. Strophometer=23 revs.
6.35	Lighthouse bearing S 67° E.
7.0	6·364 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=14·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=17·844 N.M. Depth=380 fms. Drum=27½ revs. per min.=4·8 KTS. Ship's engines=26 revs. per min. Weight on brake levers=1395 lbs. Dynamometer=(lifting). Strophometer=25 revs.
7.30	8·718 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=16·9 N.M.

Hour. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End.**—*contd.*
	SUNDAY APRIL 2ND, 1893—*contd.*
	TOTAL CABLE LAID FROM SANTA ELENA HUT=20·198 N.M. Depth=450 fms. Drum=27½ revs. per min.=4·8 KTS. Ship's engines=26 revs. per min. Weight on brake levers=1395 lbs. Dynamometer=(lifting). Strophometer=25 revs.
7.38	Decreased weight on brake levers to 847 lbs.
8.0	Light SW breeze. Fine, but overcast. Calm sea, with slight S'ly swell. Bar. 30·100 (77° F.). Temp. 74° F. dry, 72°·3 F. wet. Sea surface 73° F. 11·273 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=19·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=22·753 N.M. Depth=600 fms. Drum=29 revs. per min.=5·1 KTS. Ship's engines=26 revs. per min. Weight on brake levers=847 lbs. Dynamometer=5 cwt. Strophometer=26 to 27 revs. Position: Santa Elena Lighthouse bearing S 78° E. Decreased weight on brake levers to 284 lbs.
8.18	12·894 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=20·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=24·374 N.M. Depth=800 fms. CHANGED COURSE TO S 29° W. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, S 83° W (MADE GOOD S 84° W)=12·894 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 83° W=11·775 N.M. SLACK=9·5°/ₒ. Santa Elena Lighthouse bearing S 80° E. Position { Lat. 2° 7′·5 S. Long. 81° 15′·5 W.
8.30	13·827 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=21·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=25·307 N.M. Depth=900 fms.

Hour P.M.	Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*
	SUNDAY, APRIL 2ND, 1893—*contd.*
	Drum=29 revs. per min.=5·1 KTS. Ship's engines=26 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 to $5\frac{1}{4}$ cwt. Strophometer=24 to 26 revs.
8.35	Increased ship's engines to 28 revs. per min.
9.0	16·534 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=23·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=28·014 N.M. Depth=1000 fms. Drum=$30\frac{1}{2}$ revs. per min.=5·37 KTS. Ship's engines=28 revs. per min. Weight on brake levers=284 lbs. Dynamometer=$3\frac{1}{2}$ cwt. Strophometer=28 to 30 revs.
9.25	Put brakes down a little, and brought strain up to 7 cwt.
9.30	19·433 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=28·3 N.M. (corrected for 11°/ₒ too slow since leaving anchorage). TOTAL CABLE LAID FROM SANTA ELENA HUT=30·913 N.M. Depth=1050 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=28 revs. per min. Weight on brake levers=284 lbs. Dynamometer=7 cwt. Strophometer=29 to 31 revs.
9.33	Increased weight on brake levers to 426 lbs., and brought strain up to 9 cwt.
10.0	22·122 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=30·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=33·602 N.M. Depth=1100 fms. Drum=32 revs. per min.=5·6 KTS. Ship's engines=29 revs. per min. Weight on brake levers=426 lbs. Dynamometer=8·6 cwt. Strophometer=28 to 30 revs.
10.4	22·528 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=31·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=34 008 N.M. Depth=1100 fms. CHANGED COURSE to S $9\frac{1}{2}$° W. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, S 29° W (MADE GOOD S $29\frac{1}{2}$° W)=9·634 N.M.

HOUR. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	SUNDAY, APRIL 2ND, 1893—*contd.*
	DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 29° W=8·750 N.M. SLACK=10·1°/ₒ. Position { Lat. 2° 14′·2 S. / Long. 81° 20′·0 W.
10.6	Increased ship's engines to 30 revs. per min.
10.30	24·947 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=33·4 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=36·427 N.M. Depth 1200 fms. Drum=32 revs. per min.=5·63 KTS. Ship's engines=29½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=8 to 8¼ cwt. Strophometer=29 to 31 revs.
11.0	27·931 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=36·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=39·411 N.M. Depth=1200 fms. Drum=33½ revs. per min.=5·88 KTS. Ship's engines=30 revs. per min. Weight on brake levers=426 lbs. Dynamometer=8¼ cwt. Strophometer=29 to 32 revs.
11.28	Put brakes down a little, and raised strain to between 9½ and 10 cwt.
11.30	30·896 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=38·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=42·376 N.M. Depth=1200 fms. Drum=33½ revs. per min.=5·9 KTS. Ship's engines=30 revs. per min. Weight on brake levers=426 lbs. Dynamometer=10·1 cwt. Strophometer=29 to 31 revs.
11.33	Increased ship's engines to 32 revs. per min.
11.51	" " " " 33 " "
MIDNT.	Light SW breeze. Fine, but overcast. Slight S'ly swell. Bar. 30·140 (75° F.). Temp. 72° F. dry, 70°·5 F. wet. Sea surface 71°·8 F. 34·004 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=41·5 N.M.

HOUR. A.M. | **Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*

SUNDAY, APRIL 2ND, 1893—*contd.*

TOTAL CABLE LAID FROM SANTA ELENA HUT=45·484 N.M. Depth=1250 fms.

Drum=36 revs. per min.=6·34 KTS. Ship's engines=33 revs. per min. Weight on brake levers=426 lbs. Dynamoter=9 cwt. Strophometer=31 to 35 revs.

MONDAY, APRIL 3RD, 1893.

0.30 — 37·182 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=44·8 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=48·662 N.M. Depth=1300 fms.

Drum=36 revs. per min.=6·34 KTS. Ship's engines=32 revs. per min. Weight on brake levers=426 lbs. Dynamometer=10 cwt. Strophometer=35 revs.

1.0 — 40·301 N.M. of Light Deep Sea, No. 1235 pt. Sec. "10," paid out from after tank. Patent log=47·9 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=51·781 N.M. Depth=1340 fms.

Drum=35 revs. per min.=6·16 KTS. Ship's engines=31 revs. per min. Weight on brake levers=426 lbs. Dynamometer=10 cwt. Strophometer=33 revs.

1.30 — 43·456 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=50·0 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=54·936 N.M. Depth=1350 fms.

Drum=$35\frac{1}{2}$ revs. per min.=6·2 KTS. Ship's engines=31 revs. per min. Weight on brake levers=426 lbs. Dynamometer=10 cwt. Strophometer=31 to 33 revs.

1.33 — Increased weight on brake levers to 497 lbs.

1.34 — Increased ship's engines to 35 revs. per min.

2.0 — 46·843 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=53·2 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=58·323 N.M. Depth=1350 fms.

Drum=38 revs per min.=6·68 KTS. Ship's engines=35 revs. per min. Weight on brake levers=497 lbs. Dynamometer=$10\frac{1}{2}$ cwt. Strophometer=35 to 37 revs.

HOUR. A.M.	Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*
	MONDAY, APRIL 3RD, 1893—*contd.*
2.30	50·150 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=56·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=61·630 N.M. Depth=1370 fms. Drum=37½ revs. per min.=6·56 KTS. Ship's engines=35 revs. per min. Weight on brake levers=497 lbs. Dynamometer=10½ cwt. Strophometer=32 to 35 revs.
3.0	53·419 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=59·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=64·899 N.M. Depth=1400 fms. Drum=37 revs. per min.=6·51 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=497 lbs. Dynamometer=11½ cwt. Strophometer=34 revs.
3.30	56·730 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=62·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=68·210 N.M. Depth=1400 fms. Drum=37½ revs. per min.=6·56 KTS. Ship's engines=35 revs. per min. Weight on brake levers=497 lbs. Dynamometer=11 cwt. Strophometer=32 to 35 revs.
3.41	Decreased weight on brake levers to 426 lbs.
4.0	Light SW breeze. Fine, but overcast. Slight S'ly swell. Bar. 30·030 (74° F.). Temp. 70°·2 F. dry, 70°·0 F. wet. Sea surface 71°·0 F. 60·046 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=66·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=71·526 N.M. Depth=1400 fms. Drum=37½ revs. per min.=6·56 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=11 cwt. Strophometer=32 to 35 revs.
4.30	63·304 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Patent log=69·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=74·784 N.M. Depth=1400 fms.

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	MONDAY, APRIL 3RD, 1893—*contd.*
	Drum=37 revs. per min.=6·5 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=11 cwt. Strophometer=35 revs.
4.45	SPLICE in Light Deep Sea, No. 1235, between pt. Sec. "10" and Sec. "6" from after tank passed off drum. 64·884 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from after tank. Length by Factory measurement of Light Deep Sea, No. 1235, pt. Sec. "10," .. =64·979 N.M. Length by Drum measurement of Light Deep Sea, No. 1235, pt. Sec. "10" .. .. =64·884 " Difference.. .. .. =0·095 N.M. Patent log=71·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=76·459 N.M. Depth=1400 fms. Position of splice { Lat. 2° 51′·1 S. Long. 81° 29′·1 W.
5.0	1·545 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=72·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=78·004 N.M. Depth=1400 fms. Drum=35½ revs. per min.=6·24 KTS. Ship's engines=34½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=11 cwt. Strophometer=35 revs.
5.30	4·796 N.M. of Light Deep Sea, No. 1235, Sec. "6" paid out from after tank. Patent log=75·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=81·255 N.M. Depth=1400 fms. Drum=38 revs. per min.=6·6 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=11 cwt. Strophometer=35 revs.
6.0	8·145 N.M. of Light Deep Sea, No. 1235, Sec. "6" paid out from after tank. Patent log=79·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=84·604 N.M. Depth=1400 fms. Drum=37½ revs. per min.=6·6 KTS. Ship's engines=35 revs per min. Weight on brake levers=426 lbs. Dynamometer=11 cwt. Strophometer=35 revs.

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	MONDAY, APRIL 3RD, 1893—*contd.*
	Daylight now, but sky overcast; stellar observations impracticable.
6.30	11·464 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=82·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=87·923 N.M. Depth=1400 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=11 cwt. Strophometer=35 revs.
6.43	Commenced to pump water out of forward ballast tank.
7.0	14·801 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=86·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=91·260 N.M. Depth=1400 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=11 cwt. Strophometer=35 revs.
7.30	18·156 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=89·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=94·615 N.M. Depth=1400 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=11 cwt. Strophometer=35 revs.
8.0	Light SSW wind. Fine, but overcast, with squally appearance and slight rain at times. Slight S'ly swell. Bar. 30·130 (72° F.). Temp. 70°·2 F. dry, 69°·5 F. wet. Sea surface 70°·5 F. 21·566 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=92·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=98·025 N.M. Depth=1400 fms. Drum=40 revs. per min.=7·0 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=11 cwt. Strophometer=36 revs.
8.13	23·031 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=93·6 N.M.

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	MONDAY, APRIL 3RD, 1893—*contd.*
	TOTAL CABLE LAID FROM SANTA ELENA HUT=99·490 N.M. Depth=1400 fms. Weight on brake levers=426 lbs. Position by observations { Lat. 3° 17'·0 S by Acct. Long. 81° 32·9 W by Chron. } Approximate.
8.30	25·041 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=95·8 N M. TOTAL CABLE LAID FROM SANTA ELENA HUT=101·500 N.M. Depth=1400 fms. Drum=40 revs. per min=7·0 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=10 cwt. Strophometer=34 to 36 revs.
8.45	Increased weight on brake levers to 497 lbs.
9.0	28·405 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=99·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=104·864 N.M. Depth=1400 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=497 lbs. Dynamometer=11 cwt. Strophometer=35 revs.
9.30	31·859 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=102·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=108·318 N.M. Depth=1400 fms. Drum=40 revs. per min.=7·04 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=497 lbs. Dynamometer=10½ cwt. Strophometer=35 revs.
10.0	35·270 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=105·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=111·729 N.M Depth=1400 fms. Drum=40 revs. per min =7·04 KTS. Ship's engines=35 revs. per min. Weight on brake levers=497 lbs. Dynamometer=11 cwt. Strophometer=35 revs.
10.29	Decreased weight on brake levers to 426 lbs.

HOUR.
A.M.

Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*

MONDAY, APRIL 3RD, 1893—*contd.*

10.30

38·639 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=108·9 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=115·098 N.M.

Depth=1400 fms.

Drum=38 revs. per min.=6·68 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=11 cwt. Strophometer=34 to 36 revs.

11.0

42·005 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=112·0 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=118·464 N.M.

Depth=1400 fms.

Drum=39 revs. per min.=6·86 KTS. Ship's engines=$35\frac{1}{2}$ revs. per min. Weight on brake levers=426 lbs. Dynamometer=$10\frac{1}{2}$ cwt. Strophometer=35 to 36 revs.

11.30

45·407 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=115·4 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=121·866 N.M.

Depth=1400 fms.

Drum=40 revs. per min.=7·0 KTS. Ship's engines=$35\frac{1}{2}$ revs. per min. Weight on brake levers=426 lbs. Dynamometer=10 cwt. Strophometer=35 revs.

NOON.

(Engineer's time.) Light S by W breeze. Fine, but very cloudy. Slight sea and swell from S'd.

Bar. 30·100 (73° F.). Temp. 69·8° F. dry, 69° F. wet. Sea surface 69·6° F.

Temp. in cable tanks, bottom of cone: Fore tank 71° F., main tank $70\frac{1}{2}$° F.

48·779 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=118·9 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=125·238 N.M.

Depth=1400 fms.

Drum=39 revs. per min.=6·86 KTS. Ship's engines=36 revs. per min. Weight on brake levers=426 lbs. Dynamometer=10·4 cwt. Strophometer=34 to 36 revs.

P.M.

0.15

(Noon by observations.) 50·439 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank+64·979 N.M.=115·418 N.M. of Light Deep Sea cable laid. Patent log=120·5 N.M.

Hour. P.M.	Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*
	MONDAY, APRIL 3RD, 1893—*contd.*
	TOTAL CABLE LAID FROM SANTA ELENA HUT=126·898 N.M. Depth=1400 fms. CABLE, BY INDICATOR, CORRECTED, LAID FROM SANTA ELENA CABLE HUT=126·898 N.M. DISTANCE, BY CHART, OVERGROUND, FROM SANTA ELENA CABLE HUT=113·439 N.M. SLACK=11·86°/ₒ. COURSE MADE GOOD SINCE 10.4 P.M. YESTERDAY=S 13½° W. CABLE, BY INDCIATOR, PAID OUT SINCE 10.4 P.M. YESTERDAY =92·890 N.M. DISTANCE, BY CHART, OVERGROUND=82·064 N.M. SLACK=13·1 °/ₒ. Position by observations { Lat. 3° 34′·7 S. Long. 81° 37′·3 W. Current observed since 10.4 p.m. yesterday=N 38° W, 11·8 N.M.=0·83 KT.
0.30	52·233 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=122·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=128·692 N.M. Depth=1500 fms. Drum=39 revs. per min.=6·86 KTS. Ship's engines=36 revs. per min. Weight on brake levers=426 lbs. Dynamometer=10 cwt. Strophometer=35 to 37 revs.
0.45	Increased weight on brake levers to 497 lbs.
1.0	55·750 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=125·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=132·209 N.M. Depth=1500 fms. Drum=39½ revs. per min.=6·9 KTS. Ship's engines=36 revs. per min. Weight on brake levers=497 lbs. Dynamometer=11 cwt. Strophometer=34 to 37 revs.
1.30	59·199 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=129·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=135·658 N.M. Depth=1550 fms. Drum=39½ revs. per min.=6·9 KTS. Ship's engines=36 revs. per min. Weight on brake levers=497 lbs. Dynamometer=11 cwt. Strophometer=35 revs.

S.S. "SILVERTOWN."

Hour. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	MONDAY, APRIL 3RD, 1893—*contd.*
2.0	62·635 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=132·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=139·094 N.M. Depth=1600 fms. Drum=39 revs per min.=6·86 KTS. Ship's engines=36 revs. per min. Weight on brake levers=497 lbs. Dynamometer=11·5 cwt. Strophometer=35 to 37 revs.
2.6	Increased weight on brake levers to 568 lbs.
2.12	" " " 634 "
2.30	66·125 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=135·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=142·584 N.M. Depth=1700 fms. Drum=39½ revs. per min.=6·9 KTS. Ship's engines=36 revs. per min. Weight on brake levers=634 lbs. Dynamometer=12 cwt. Strophometer=35 revs.
3.0	69·474 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=139·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=145·933 N.M. Depth=1700 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=36 revs. per min. Weight on brake levers=634 lbs. Dynamometer=13 cwt. Strophometer=35 revs.
3.30	72·849 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=142·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=149·308 N.M. Depth=1700 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=36 revs. per min. Weight on brake levers=634 lbs. Dynamometer=13 cwt. Strophometer=33 to 36 revs.
3.33	Increased ship's engines to 40 revs. per min.
3.38	Decreased weight on brake levers to 568 lbs.
3.40	" " " 497 "
4.0	Light S by W breeze. Fine, but cloudy. Slight sea and swell from the S'd and W'd.

HOUR. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	MONDAY, APRIL 3RD, 1893—*contd.*
	Bar. 30·020 (72° F.). Temp. 71°·5 F. dry, 69°·5 F. wet. Sea surface 69°·5 F. 76·592 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=146·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=153·051 N.M. Depth=1700 fms. Drum=42 revs. per min.=7·4 KTS. Ship's engines=39½ revs. per min. Weight on brake levers=497 lbs. Dynamometer=11·5 cwt. Strophometer=38 revs.
4.15	Decreased weight on brake levers to 426 lbs.
4.19	Increased ,, ,, ,, 497 ,,
4.30	80·183 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=151·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=156·642 N.M. Depth=1700 fms Drum=40½ revs. per min.=7·1 KTS. Ship's engines=40 revs. per min. Weight on brake levers=497 lbs. Dynamometer=11·5 cwt. Strophometer=36 revs.
4.37	80·983 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=151·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=157·442 N.M Depth=1700 fms. Position by observations { Lat. 4° 6′·5 S, Long. 81° 41′·9 W } approximate.
5.0	83·958 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=154·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=160·417 N.M. Depth=1700 fms. Drum=42½ revs. per min.=7·4 KTS. Ship's engines=40 revs. per min. Weight on brake levers=497 lbs. Dynamometer=11½ cwt. Strophometer=38 revs.
5.30	87·836 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=158·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=164·295 N.M. Depth=1700 fms.

Hour. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	MONDAY, APRIL 3RD, 1893—*contd.*
	Drum=43½ revs. per min.=7·6 KTS. Ship's engines=40 revs. per min. Weight on brake levers=497 lbs. Dynamometer=11½ cwt. Strophometer=38 revs.
5.42	Increased weight on brake levers to 568 lbs.
6.0	91·649 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=162·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=168·108 N.M. Depth=1700 fms. Drum=43 revs. per min.=7·56 KTS. Ship's engines=40 revs. per min. Weight on brake levers=568 lbs. Dynamometer=11·5 cwt. Strophometer=38 revs. Temp. in cable tanks, bottom of cone: fore tank 72° F., main tank 71° F.
6.11	Increased weight on brake levers to 634 lbs.
6.30	95·381 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=166·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=171·840 N.M. Depth=1700 fms. Drum=43 revs. per min.=7·56 KTS. Ship's engines=40 revs. per min. Weight on brake levers=634 lbs. Dynamometer=13 cwt. Strophometer=35 to 37 revs.
6.38	96·364 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=167·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=172·823 N.M. Depth=1700 fms. Position by stars {Lat. 4° 13′·0 S, Long. 81° 38′·4 W} approximate. Current observed since noon=N 50° W, 10·9 N.M.=1·6 KTS.
7.0	98·912 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=170·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=175·371 N.M. Depth=1700 fms. Drum=40 revs. per min.=7·0 KTS. Ship's engines=39 revs. per min. Weight on brake levers=634 lbs. Dynamometer=13 cwt. Strophometer=37 revs.

Hour. P.M.	Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*
	MONDAY, APRIL 3RD, 1893—*contd.*
7.30	102·602 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=173·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=179·061 N.M. Depth=1700 fms. Drum=42 revs. per min.=7·39 KTS. Ship's engines=40 revs. per min. Weight on brake levers=634 lbs. Dynamometer=13 cwt. Strophometer=40 revs.
8.0	Light E'ly breeze. Fine, bright and clear. Moderate S'ly swell. Bar. 30·100 (72° F.). Temp. 68° F. dry, 68° F. wet. Sea surface 67° F. 106·009 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=177·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=182·468 N.M. Depth=1700 fms. Drum=39 revs. per min.=6·86 KTS. Ship's engines=35 revs. per min. Weight on brake levers=634 lbs. Dynamometer=13 cwt. Strophometer=36 revs.
8.12	Increased weight on brake levers to 703 lbs.
8.30	109·350 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=180·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=185·809 N.M. Depth=1700 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=40 revs. per min. Weight on brake levers=703 lbs. Dynamometer=14 cwt. Strophometer=39 revs. NOTE.—During the last hour ship's engines were decreased gradually to 35 revs. per min. for engine-room purposes, and then increased to the required speed, viz.: 40 revs. During the last half-hour the drum has averaged 38 revs. per min., but is now running at 42 revs. per min.
9.0	113·200 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=184·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=189·659 N.M. Depth=1700 fms. Drum=44 revs. per min.=7·74 KTS. Ship's engines=40 revs. per mim. Weight on brake levers=703 lbs. Dynamometer=13 cwt. Strophometer=38 to 41 revs.

Hour. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	MONDAY, APRIL 3RD, 1893—*contd.*
9.1	Increased weight on brake levers to 774 lbs.
9.20	115·823 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=186·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=192·282 N.M. Depth=1700 fms. Patent logs now reset. CHANGED COURSE TO S 32° E. COURSE MADE GOOD SINCE NOON=S 3° W. CABLE, BY INDICATOR, CORRECTED, PAID OUT SINCE NOON=65·384 N.M. DISTANCE, BY CHART, OVERGROUND SINCE NOON=59·000 N.M. SLACK=10·8 %. Position { Lat. 4° 34′·0 S. / Long. 81° 40′·0 W.
9.30	116·889 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=1·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=193·348 N.M. Depth=1720 fms. Drum=40 revs. per min.=7·04 KTS. Ship's engines=40 revs. per min. Weight on brake levers=774 lbs. Dynamometer=13½ to 14 cwt. Strophometer=37 revs.
10.0	120·582 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=4·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=197·041 N.M. Depth=1800 fms. Drum=43 revs. per min.=7·56 KTS. Ship's engines=41 revs. per min. Weight on brake levers=774 lbs. Dynamometer=14 cwt. Strophometer=36 to 39 revs.
10.13	Increased weight on brake levers to 845 lbs.
10.30	124·263 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=8·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=200·722 N.M. Depth=1750 fms. Drum=41 revs. per min.=7·22 KTS. Ship's engines=40 revs. per min. Weight on brake levers=845 lbs. Dynamometer=13 to 14 cwt. Strophometer=38 revs.

Hour. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	MONDAY, APRIL 3RD, 1893—*contd.*
11.0	128·029 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=11·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=204·488 N.M. Depth=1750 fms. Drum=41 revs. per min.=7·22 KTS. Ship's engines=40½ revs. per min. Weight on brake levers=845 lbs. Dynamometer=14 cwt. Strophometer=39 revs. CHANGED COURSE TO S 7½° E. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, S 32° E (MADE GOOD S 19° E)=12·206 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 32° E=11·500 N.M. SLACK=6·1°/₀. Position { Lat. 4° 45′·0 S. Long. 81° 36′·3 W.
11.30	131·825 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=15·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=208·284 N.M. Depth=1700 fms. Drum=43 revs. per min.=7·57 KTS. Ship's engines=41 revs. per min. Weight on brake levers=845 lbs. Dynamometer=14 cwt. Strophometer=38 to 40 revs.
MIDNT.	Light S by E airs. Fine, but cloudy. Slight sea and swell from S'd and W'd. Bar. 30·120 (71° F.). Temp. 68°·5 F. dry. 68° F. wet. Sea surface 67°·3 F. 135·639 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=19·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=212·098 N.M. Depth=1500 fms. Drum=42 revs. per min.=7·39 KTS. Ship's engines=41 revs. per min. Weight on brake levers=845 lbs. Dynamometer=13½ cwt. Strophometer=39 to 41 revs.
	TUESDAY, APRIL 4TH, 1893.
A.M. 0.30	139·302 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=22·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=215·761 N.M.

HOUR. A.M.

Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*

TUESDAY, APRIL 4TH, 1893—*contd.*

Depth=1450 fms.

Drum=41½ revs. per min.=7·28 KTS. Ship's engines=41½ revs. per min. Weight on brake levers=845 lbs. Dynamometer=15 cwt. Strophometer=38 revs.

0.38 Decreased weight on brake levers to 639 lbs.

1.0 142·880 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=26·3 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=219·339 N.M.

Depth=1350 fms.

Drum=40½ revs. per min.=7·1 KTS. Ship's engines= 41½ revs. per min. Weight on brake levers=639 lbs. Dynamometer=13 cwt. Strophometer=37 to 38 revs.

1.7 Decreased weight on brake levers to 568 lbs.

1.13 " " " 497 "

1.30 146·509 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=29·9 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=222·968 N.M.

Depth=1250 fms.

Drum=41 revs per min.=7·2 KTS. Ship's engines=41 revs. per min. Weight on brake levers=497 lbs. Dynamometer=11·5 cwt. Strophometer=37 revs.

1.38 Decreased weight on brake levers to 426 lbs.

2.0 150·157 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=33·4 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=226·616 N.M.

Depth=1250 fms.

Drum=41 revs. per min.=7·2 KTS. Ship's engines=41½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=10·5 cwt. Strophometer=37 revs.

2.30 153·874 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=37·0 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=230·333 N.M.

Depth=1200 fms.

Drum=42 revs. per min.=7·39 KTS. Ship's engines=41½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=10 cwt. Strophometer=38 revs.

HOUR. A.M.	Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*
	TUESDAY, APRIL 4TH, 1893—*contd.*
3.0	157·555 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=40·4 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=234·014 N.M. Depth=1200 fms. Drum=41½ revs. per min.=7·28 KTS. Ship's engines=41 revs. per min. Weight on brake levers=426 lbs. Dynamometer=10 cwt. Strophometer=37 revs.
3.30	161·251 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=44·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=237·710 N.M. Depth=1150 fms. Drum=41½ revs. per min.=7·28 KTS. Ship's engines=41 revs. per min. Weight on brake levers=426 lbs. Dynamometer=10 cwt. Strophometer=38 revs.
4.0	Calm, fine, but overcast and cloudy. Slight S'ly sea and swell. Bar. 30·050 (71° F.). Temp. 68° F. dry, 67° F. wet. Sea surface 68° F. 164·894 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=47·4 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=241·353 N.M. Depth=1150 fms. Drum=41 revs. per min.=7·2 KTS. Ship's engines=40½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=10 cwt. Strophometer=37 revs. During this watch it appears, by the lead of the cable, that the ship has been set slightly to the Eastward.
4.30	168·581 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=51·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=245·040 N.M. Depth=1150 fms. Drum=41½ revs. per min.=7·25 KTS. Ship's engines=40 revs. per min. Weight on brake levers=426 lbs. Dynamometer=10 cwt. Strophometer=38 revs.
5.0	172·333 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=54·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=248·792 N.M. Depth=1200 fms.

HOUR A.M.

Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*

TUESDAY, APRIL 4TH, 1893—*contd.*

Drum=42½ revs. per min.=7·5 KTS. Ship's engines=40 revs. per min. Weight on brake levers=426 lbs. Dynamometer=10 cwt. Strophometer=40 revs.

5.12 Increased weight on brake levers to 497 lbs.

5.30 176·155 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=58·2 N.M.
TOTAL CABLE LAID FROM SANTA ELENA HUT=252·614 N.M.
Depth=1250 fms.
Drum=43 revs. per min.=7·56 KTS. Ship's engines=40½ revs. per min. Weight on brake levers=497 lbs Dynamometer=10½ cwt. Strophometer=40 revs.

5.57 179·598 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=60·5 N.M
TOTAL CABLE LAID FROM SANTA ELENA HUT=256·057 N.M.
Depth=1300 fms.

5.58 Increased weight on brake levers to 568 lbs.

6.0 180·039 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=61·4 N.M.
TOTAL CABLE LAID FROM SANTA ELENA HUT=256·498 N.M.
Depth=1300 fms.
Drum=44 revs. per min.=7·74 KTS. Ship's engines=40 revs. per min. Weight on brake levers=568 lbs. Dynamometer=11 cwt. Strophometer=41 revs.

6.8 Increased weight on brake levers to 634 lbs.

6.30 183·877 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=65·0 N.M.
TOTAL CABLE LAID FROM SANTA ELENA HUT=260·336 N.M.
Depth=1300 fms.
Drum=43½ revs. per min.=7·6 KTS. Ship's engines=40½ revs. per min. Weight on brake levers=634 lbs. Dynamometer=11½ cwt. Strophometer=40 revs.

6.35 Bearings { Pisura Point S 64° E.
False Point S 42° E.

7.0 187·649 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=68·4 N.M.

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	TUESDAY, APRIL 4TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SANTA ELENA HUT=264·108 N.M. Depth=1100 fms. Drum=42½ revs. per min.=7·4 KTS. Ship's engines=40 revs. per min. Weight on brake levers=634 lbs. Dynamometer=10½ cwt. Strophometer=40 revs.
7.1	Decreased weight on brake levers to 568 lbs.
7.28	" " " 497 "
7.30	191·357 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=71·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=267·816 N.M. Depth=1000 fms. Drum=42 revs. per min.=7·39 KTS. Ship's engines=40 revs. per min. Weight on brake levers=497 lbs. Dynamometer=10 cwt. Strophometer=39 revs.
8.0	Calm. Fine, bright and clear. Smooth sea, with moderate S'ly swell. Bar. 30·100 (71° F.). Temp. 68·8° F. dry, 68° F. wet. Sea surface 68·2° F. 195·032 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=75·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=271·491 N.M. Depth=1000 fms. Drum=41½ revs. per min.=7·21 KTS. Ship's engines=40 revs. per min. Weight on brake levers=497 lbs. Dynamometer=10 cwt. Strophometer=38 revs. Temp. in cable tanks, bottom of cone: fore tank 72° F., main tank 71½° F.
8.10	Decreased weight on brake levers to 426 lbs.
8.30	198·866 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=78·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=275·325 N.M. Depth=1000 fms. Drum=42 revs. per min.=7·4 KTS. Ship's engines=40 revs. per min. Weight on brake levers=426 lbs. Dynamometer=9 to 10 cwt. Strophometer=38 revs.

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	TUESDAY, APRIL 4TH, 1893—*contd.*
9.0	202·709 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=81·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=279·168 N.M. Depth=1000 fms. Drum=43½ revs. per min.=7·6 KTS. Ship's engines=40 revs. per min. Weight on brake levers=426 lbs. Dynamometer=9½ cwt. Strophometer=40 revs.
9.8	Increased weight on brake levers to 497 lbs.
9.30	206·493 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=85·4 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=282·952 N.M. Depth=1000 fms. Drum=43 revs. per min.=7·56 KTS. Ship's engines=41 revs. per min. Weight on brake levers=497 lbs. Dynamometer=11 cwt. Strophometer=39 revs.
10.0	210·310 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=88·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=286·769 N.M. Depth=1000 fms. Drum=43 revs. per min.=7·56 KTS. Ship's engines=41 revs. per min. Weight on brake levers=497 lbs. Dynamometer=11 cwt. Strophometer=38 to 41 revs. CHANGED COURSE TO S 19° E. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, S 7½° E (MADE GOOD S 8½° E)=82·281 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 7½° E=79·800 N.M. SLACK=3·1°/₀. Position { Lat. 6° 4′·0 S. / Long. 81° 25′·0 W. }
10.30	214·123 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=92·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=290·582 N.M. Depth=1000 fms. Drum=42 revs. per min.=7·4 KTS. Ship's engines=41 revs. per min. Weight on brake levers=497 lbs. Dynamometer=11½ cwt. Strophometer=38 to 41 revs.

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	TUESDAY, APRIL 4TH, 1893—*contd.*
10.40	Decreased weight on brake levers to 426 lbs.
10.45	" " " 355 "
10.50	" " " 284 "
10.58	" " " 213 "
11.0	217·872 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=95·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=294·331 N.M. Depth=about 1000 fms. Drum=43 revs. per min.=7·57 KTS. Ship's engines=41 revs. per min. Weight on brake levers=213 lbs. Dynamometer=10 cwt. Strophometer=38 to 41 revs.
11.11	Decreased weight on brake levers to 142 lbs.
11.30	221·556 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=99·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=298·015 N.M. Depth=1000 fms. Drum=42 revs. per min.=7·36 KTS. Ship's engines=40½ revs. per min. Weight on brake levers=142 lbs. Dynamometer=9 cwt. Strophometer=37 revs.
NOON.	(Engineer's time.) Calm, fine and clear. Moderate swell from S'd and E'd. Ship pitching slightly. Bar. 30·070 (72° F.). Temp. 71°8 F. dry, 70° F. wet. Sea surface 71°·5 F. 225·349 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=102·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=301·808 N.M. Depth=1000 fms. Drum=43 revs. per min.=7·56 KTS. Ship's engines=40½ revs. per min. Weight on brake levers=142 lbs. Dynamometer=9½ cwt. Strophometer=38 to 41 revs. Temp. in cable tanks, bottom of cone: fore tank 72½° F., main tank 72° F.
P.M. 0.12	(Noon by observations.) 226·988 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=104 N.M.

HOUR. P.M.

Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*

TUESDAY, APRIL 4TH, 1893—*contd.*

TOTAL CABLE LAID FROM SANTA ELENA HUT=303·447 N.M.
Depth=1000 fms.
CABLE, BY INDICATOR, PAID OUT SINCE OBSERVED NOON YESTERDAY=176·549 N.M.
DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=166·300 N.M.
SLACK=6·16 °/o.
Position by observations { Lat. 6° 19′·8 S. Long. 81° 19′·2 W.
Current observed since 6.40 p.m. yesterday=S 50° W, 9·8 N.M.=0·56 KT.

0.15 Increased weight on brake levers to 213 lbs.

0.30 229·251 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=105·9 N.M.
TOTAL CABLE LAID FROM SANTA ELENA HUT=305·710 N.M.
Depth=1100 fms.
Drum=44 revs. per min.=7·74 KTS. Ship's engines=41 revs. per min. Weight on brake levers=213 lbs. Dynamometer=8 cwt. Strophometer=37 to 41 revs.

0.40 Increased weight on brake levers to 355 lbs.

0.44 " " " 426 "

1.0 233·118 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=109·2 N.M.
TOTAL CABLE LAID FROM SANTA ELENA HUT=309·577 N.M
Depth=1300 fms.
Drum=43½ revs. per min.=7·6 KTS. Ship's engines=40 revs. per min. Weight on brake levers=426 lbs. Dynamometer=9 cwt. Strophometer=37 to 40 revs.

1.12 Increased weight on brake levers to 497 lbs.

1.30 237·023 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=112·6 N.M.
TOTAL CABLE LAID FROM SANTA ELENA HUT=313·482 N.M.
Depth=1200 fms.
Drum=44½ revs. per min.=7·8 KTS. Ship's engines=40½ revs. per min. Weight on brake levers=497 lbs. Dynamometer=8½ cwt. Strophometer=37 to 40 revs.

S.S. "SILVERTOWN."

HOUR. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	TUESDAY, APRIL 4TH, 1893—*contd.*
2.0	240·880 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=116·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=317·348 N.M. Depth=1150 fms. Drum=43½ revs. per min.=7·6 KTS. Ship's engines=40 revs. per min. Weight on brake levers=497 lbs. Dynamometer=8 cwt. Strophometer=38 to 41 revs.
2.20	Sighted Island of Lobos de Tierra, bearing N 73° E.
2.28	Decreased weight on brake levers to 426 lbs.
2.30	244·670 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=119·4 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=321·129 N.M. Depth=1050 fms. Drum=42½ revs. per min.=7·45 KTS. Ship's engines=40 revs. per min. Weight on brake levers=426 lbs. Dynamometer=8 cwt. Strophometer=37 revs.
2.46	Decreased weight on brake levers to 355 lbs.
3.0	248·389 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=122·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=324·848 N.M. Depth=1100 fms. Drum=42 revs. per min.=7·4 KTS. Ship's engines=40 revs. per min. Weight on brake levers=355 lbs. Dynamometer=8 cwt. Strophometer=37 revs.
3.16	Decreased weight on brake levers to 284 lbs.
3.30	251·986 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=126·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=328·445 N.M. Depth=1100 fms. Drum=40½ revs. per min.=7·1 KTS. Ship's engines=40 revs. per min. Weight on brake levers=284 lbs. Dynamometer=8 cwt. Strophometer=37 revs.
4.0	Light S by E breeze, fine and clear. Moderate S'ly sea and swell. Ship pitching slightly. Bar. 29·960 (72° F.). Temp. 74°·5 F. dry, 71°·5 F. wet. Sea surface 71°·5 F.

Hour. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*

TUESDAY, APRIL 4TH, 1893—*contd.*

255·546 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=129·4 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=332·005 N.M.

Depth=1150 fms.

Drum=40 revs. per min.=7·04 KTS. Ship's engines=40 revs. per min. Weight on brake levers=284 lbs. Dynamometer=9 cwt. Strophometer=35 to 38 revs.

4.10 Decreased weight on brake levers to 213 lbs.

4.30 259·130 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=133·0 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=335·589 N.M.

Depth=1300 fms.

Drum=40½ revs. per min.=7·1 KTS. Ship's engines=40 revs. per min. Weight on brake levers=213 lbs. Dynamometer=9 cwt. Strophometer=38 revs.

CHANGED COURSE TO SOUTH.

CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, S 19° E (MADE GOOD S 21½° E)=48·820 N.M.

DISTANCE, BY CHART, OVERGROUND ON LAST COURSE, S 19° E=47·000 N.M.

SLACK=3·8°/o.

Position { Lat. 6° 47·7 S.
Long. 81° 7′·5 W.

4.35 Increased weight on brake levers to 284 lbs.

4.50 ,, ,, ,, 355 ,,

4.52 ,, ,, ,, 426 ,,

5.0 262·988 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=136·3 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=339·447 N.M.

Depth=1700 fms.

Drum=43½ revs. per min.=7·6 KTS. Ship's engines=40 revs. per min. Weight on brake levers=426 lbs. Dynamometer=9½ cwt. Strophometer=40 revs.

5.6 Decreased ship's engines to 38 revs. per min.

HOUR. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	TUESDAY, APRIL 4TH, 1893—*contd.*
5.8	Increased weight on brake levers to 497 lbs.
5.12	,, ,, ,, 568 ,,
5.30	266·669 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=139·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=343·128 N.M. Depth=1550 fms. Drum=41½ revs. per min.=7·3 KTS. Ship's engines=37½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=11 cwt. Strophometer=37 revs.
5.51	Decreased weight on brake levers to 497 lbs.
6.0	270·512 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=142·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=346·971 N.M. Depth=1300 fms. Drum=43½ revs. per min.=7·6 KTS. Ship's engines=38 revs. per min. Weight on brake levers=497 lbs. Dynamometer=10 cwt. Strophometer=37 to 40 revs. Temp. in cable tanks, bottom of cone: fore tank 72° F., main tank 71½° F.
6.30	274·502 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=146·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=350·961 N.M. Depth=1150 fms. Drum=45 revs. per min.=7·9 KTS. Ship's engines=38½ revs. per min. Weight on brake levers=497 lbs. Dynamometer=9 cwt. Strophometer=42 revs.
6.38	Increased weight on brake levers to 568 lbs. 275·630 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=147 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=352·089 N.M. Depth=1150 fms. Position by stars { Lat. 7° 5'·3 S. Long. 81° 6·6 W. Current observed since noon=S, 5·2 N.M.=0·8 KTS.
6.48	276·795 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=148 N.M.

HOUR. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	TUESDAY, APRIL 4TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SANTA ELENA HUT=353·254 N.M. Depth=1047 fms. CHANGED COURSE TO S 27° E. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE S (made good S 2½° E)=17·665 N.M. DISTANCE, BY CHART, OVERGROUND ON LAST COURSE, S=16·600 N.M. SLACK=6·4 °/o. Position { Lat. 7° 4·5′ S. Long. 81° 6·5 W.
6.53	Decreased weight on brake levers to 497 lbs.
6.58	" " " 426 " Sudden increase in the speed of drum.
7.0	278·242 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=149·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=354·701 N.M. Depth=1050 fms. Drum=42½ revs. per min.=7·4 KTS. Ship's engines=38 revs. per min. Weight on brake levers=426 lbs. Dynamometer=10 cwt. Strophometer=38 revs.
7.30	281·906 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=152·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=358·365 N.M. Depth=1050 fms. Drum=41½ revs. per min.=7·25 KTS. Ship's engines=39 revs. per min. Weight on brake levers=426 lbs. Dynamometer=8½ cwt. Strophometer=38 revs.
8.0	Light SE wind. Fine and clear. Moderate SE to S swell. Bar. 30·040 (72° F.). Temp. 71° F. dry, 70° F. wet. Sea surface 70°·2 F. 285·628 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=155·4 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=362·087. Depth=1100 fms. Drum=42 revs. per min.=7·3 KTS. Ship's engines=38½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=8½ cwt. Strophometer=38 revs.
8.3	Decreased ship's engines to 35 revs. per min.

HOUR. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	TUESDAY, APRIL 4TH, 1893—*contd.*
8.18	Lifted brakes right up and reduced strain to 7 cwt.
8.30	289·233 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=158·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=365·692 N.M. Depth=1100 fms. Drum=41 revs. per min.=7·22 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=7½ cwt. Strophometer=39 revs.
9.0	292·764 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=161·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=369·223 N.M. Depth=1100 fms. Drum=40 revs. per min.=7·04 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=7½ to 8 cwt. Strophometer=34 to 37 revs.
9.30	296·378 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=164·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=372·837 N.M. Depth=1100 fms. Drum=41 revs. per min =7.22 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=7½ to 8 cwt. Strophometer=35 to 37 revs.
10.0	300·032 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=167·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=376·491 N.M. Depth=1150 fms. Drum=41½ revs. per min.=7·3 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamemeter=7½ cwt. Strophometer=35 to 38 revs.
10.30	303·617 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=170·2 N M. TOTAL CABLE LAID FROM SANTA ELENA HUT=380·076 N.M. Depth=1200 fms. Drum=40½ revs. per min.=7·12 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=426 lb. Dynamometer=7 to 7½ cwt. Strophometer=35 to 37 revs.

HOUR. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	TUESDAY, APRIL 4TH, 1893—*contd.*
11.0	307·121 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=173·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=383·580 N.M. Depth=1200 fms. Drum=40 revs. per min.=7·04 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=7 cwt. Strophometer=35 to 37 revs.
11.30	310·685 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=176·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=387·144 N.M. Depth=1200 fms. Drum=40½ revs. per min.=7·12 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=7½ to 8 cwt. Strophometer=35 to 37 revs.
MIDNT.	Light SSE wind. Fine and clear. Moderate SSE swell. Ship pitching at times. Bar. 30·060 (72° F.) Temp. 71° F. dry, 70° F. wet. Sea surface 70°·2 F. 314·170 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=179·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=390·629 N.M. Depth=1200 fms. Drum=39½ revs. per min.=6·95 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=7 cwt. Strophometer=35 to 37 revs.
	WEDNESDAY, APRIL 5TH, 1893.
A.M. 0.30	317·682 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=182·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=394·141 N.M. Depth=1200 fms. Drum=39 revs. per min.=6·86 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=7 cwt. Strophometer=37 revs.
1.0	321·201 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=184·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=397·660 N.M

Hour. A.M.	
	Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*
	WEDNESDAY, APRIL 5TH, 1893—*contd.*
	Depth=1200 fms. Drum=39½=revs. per min.=6·95 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=7 cwt. Strophometer=36 revs.
1.30	324·776 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=188·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=401·235 N.M. Depth=1100 fms. Drum=40½ revs. per min.=7·1 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=7½ cwt. Strophometer=37 revs.
2.0	328·319 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=190·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=404·778 N.M. Depth=1000 fms. Drum=40 revs. per min.=7·04 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=7½ cwt. Strophometer=35 revs.
2.30	331·771 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=193·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=408·230 N.M. Depth=1000 fms. Drum=39 revs. per min.=6·86 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=7½ cwt. Strophometer=36 revs.
3.0	335·285 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=196·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=411·744 N.M. Depth=1000 fms. Drum=40 revs. per min.=7·04 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=7½ cwt. Strophometer=35 to 38 revs.
3.30	338·936 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=199·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=415·395 N.M.

Hour. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	WEDNESDAY, APRIL 5TH, 1893—*contd.*
	Depth=1000 fms. Drum=41 revs. per min.=7·21 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=7 cwt. Strophometer=37 revs.
4.0	Moderate SSE breeze. Fine and clear. Moderate SSE sea and swell. Bar. 30·020 (73° F.). Temp. 70°·2, F. dry, 69° F. wet. Sea surface 70° F. 342·591 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=202·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=419·050 N.M. Depth=1000 fms. Drum=41½ revs. per min.=7·34 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=7 cwt. Strophometer=37 to 38 revs.
4.30	346·158 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=205·6 N.M. TOTAL CABLE LAID FROM SAINT ELENA HUT=422·617 N.M. Depth=1000 fms. Drum=40½ revs. per min.=7·13 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=7 cwt. Strophometer=37 revs.
5.0	349·706 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=208·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=426·165 N.M. Depth=1000 fms. Drum=40 revs. per min.=7·0 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=7 cwt. Strophometer=36 revs.
5.30	353·190 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=211·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=429·649 N.M. Depth=1000 fms. Drum=39½ revs. per min.=6·96 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. Dynamometer=7 cwt. Strophometer=36 revs.
5.38	354·141 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=212·6 N.M.

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End—*contd.***
	WEDNESDAY, APRIL 5TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SANTA ELENA HUT=430·600 N.M. Depth=1000 fms. Position by stars {Lat. 8° 14′·2 S. Long. 80° 35·7 W.} approximate. Current observed since 6.40 p.m. yesterday=S 4° W, 11·5 N.M.=1·04 KTS.
6.0	356·568 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=214·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=433·027 N.M. Depth=1000 fms. Drum=38 revs. per min.=6·6 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. (right up). Dynamometer=7 cwt. Strophometer=35 revs.
6.30	359·938 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=217·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=436·397 N.M Depth=950 fms. Drum=38 revs. per min.=6·6 KTS. Ship's engines=35 revs. per min. Weight on brake levers=426 lbs. (right up). Dynamometer=7 cwt. Strophometer=34 revs.
6.50	Decreased weight on break levers to 284 lbs.
7.0	363·322 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=220·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=439·781 N.M. Depth=800 fms. Drum=38½ revs. per min.=6·7 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. (brakes right up). Dynamometer=7 cwt Strophometer=34 revs.
7.30	366·647 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=223·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=443·106 N.M. Depth=700 fms. Drum=38 revs. per min.=6·6 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. (brakes right up). Dynamometer=7 cwt. Strophometer=34 revs.
8.0	Light S by E wind. Fine, bright and clear. Hazy horizon. Smooth sea with slight S'ly swell.

Hour. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	WEDNESDAY, APRIL 5TH, 1893—*contd.*
	Bar. 30·120 (73° F.). Temp. 72° F. dry, 69·5° F. wet. Sea surface 72° F. 370·001 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=226·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=446·460 N.M. Depth=750 fms. Drum=38 revs. per min.=6·6 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer=7 cwt. Strophometer=34 revs. Temp. in cable tanks, bottom of cone: fore tank 72½° F., main tank 72° F.
8.30	373·323 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=229·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=449·782 N.M. Depth=750 fms. Drum=37½ revs. per min.=6·6 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer=8 cwt. Strophometer=33 to 35 revs.
9.0	376·650 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=232·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=453·109 N.M. Depth=750 fms. Drum=37½ revs. per min.=6·6 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer=8 cwt. Strophometer=33 revs.
9.30	379·991 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=235·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=456·450 N.M. Depth=780 fms. Drum=38 revs. per min.=6·69 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer=8 cwt. Strophometer=33 to 35 revs. NOTE.—Took the foremost block off each brake strap on drum to ease the friction and reduce strain on cable; apparently insufficient slack is being paid out.
10.0	383·260 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=238·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=459·719 N.M. Depth=800 fms.

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	WEDNESDAY, APRIL 5TH, 1893—*contd.*
	Drum=37 revs. per min.=6·51 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer=8 cwt. Strophometer=33 to 35 revs.
10.30	386·527 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=241·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=462·986 N.M. Depth=900 fms. Drum=37 revs. per min.=6·51 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer=8½ cwts. Strophometer=33 to 35 revs.
11.0	389·752 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=244·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=466·211 N.M. Depth=900 fms. Drum=36½ revs. per min.=6·41 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer=8½ cwt. Strophometer=33 to 35 revs.
11.30	393·024 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=247·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=469·483 N.M. Depth=900 fms. Drum=37 revs. per min.=6·51 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer=7 to 7½ cwt. Strophometer=34 revs.
NOON.	(Engineer's time.) Moderate SE by S breeze. Fine, bright, and clear. Slight sea and swell from SSW. Bar. 30·100 (73° F.). Temp. 73°·8 F. dry, 70°·3 F. wet. Sea surface 73°·8 F. 396·249 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=250·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=472·708 N.M. Depth=950 fms. Drum=36½ revs. per min.=6·41 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer=7 to 7½ cwt. Strophometer=34 revs. Temp. in cable tanks, bottom of cone: fore tank 73° F, main tank 72½ F.

Hour. P.M.	

Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*

WEDNESDAY, APRIL 5th, 1893—*contd.*

0.7 — (Noon by observations.)
396·973 n.m. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=251·6 n.m.
Total Cable laid from Santa Elena Hut=473·432 n.m.
Depth=950 fms.
Cable, by Indicator, paid out since observed noon yesterday=169·985 n.m.
Distance, by Chart, overground, since observed noon yesterday=161·100 n.m.
Slack=5·5°/o.
Position by observations { Lat. 8° 46′·7 S. Long. 80° 15′·2 W.
Current observed since 5.40 a.m.=S 69° W, 1·6 n.m.=0·25 kts.

0.30 — 399·471 n.m. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=253·7 n.m.
Total Cable laid from Santa Elena Hut=475·930 n.m.
Depth=950 fms.
Drum=36½ revs. per min.=6·41 kts. Ship's engines=35½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=6 cwt. Strophometer=35 revs.

1.0 — 402·802 n.m. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=256·8 n.m.
Total Cable laid from Santa Elena Hut=479·261 n.m.
Depth=950 fms.
Drum=37½ revs. per min.=6·6 kts. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6 cwt. Strophometer=31 to 34 revs.

1.7 — Decreased ship's engines to 32 revs. per min.

1.30 — 405·857 n.m. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=259·7 n.m.
Total Cable laid from Santa Elena Hut=482·316 n.m.
Depth=850 fms.
Drum=34½ revs. per min.=6·0 kts. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5¾ cwt. Strophometer=30 revs.

Hour. P.M.	Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*
	WEDNESDAY, APRIL 5TH, 1893—*contd.*
2.0	408·790 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=262·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=485·249 N.M. Depth=850 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=31 revs.
2.30	411·868 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=264·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=488·327 N.M. Depth=850 fms. Drum=34½ revs. per min.=6·0 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=32 revs.
3.0	414·837 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=267·4 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=491·296 N.M. Depth=850 fms. Drum=33½ revs. per min.=5·85 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=29 to 32 revs.
3.30	417·857 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=270·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=494·316 N.M. Depth=860 fms. Drum=34 revs. per min.=5·9 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=30 revs.
3.40	SPLICE in Light Deep Sea, No. 1235, between Sec. "6," and Sec. "11," from after tank, passed off drum. 418·842 N.M. of Light Deep Sea, No. 1235, Sec. "6," paid out from after tank. Patent log=271·2 N.M. Length by Factory measurement of Light Deep Sea, Sec. "6" .. .. .. =419·570 N.M. Length by Drum measurement of Light Deep Sea, Sec. "6" .. .. =418·842 " Difference.. .. =−0·728 N.M.

Hour. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	WEDNESDAY, APRIL 5TH, 1893—*contd.*
	484·029 N.M. of Light Deep Sea Cable, by Factory measurement laid. TOTAL CABLE LAID FROM SANTA ELENA HUT=496·029 N.M. Depth=890 fms. Position of splice { Lat. 9° 4′·9 S. Long. 80° 3′·7 W.
4.0	Light SE by S wind. Fine, and clear. Slight sea and swell from S. Bar. 29·980 (73° F.). Temp. 74° F. dry, 71° F. wet. Sea surface 73° F. 1·886 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=272·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=497·915 N.M. Depth=890 fms. Drum=32½ revs. per min.=5·71 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=30 revs.
4.30	4·796 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=275·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=500·825 N.M. Depth=860 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=32 revs.
5.0	7·762 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=278·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=503·791 N.M. Depth=830 fms. Drum=33½ revs. per min.=5·9 KTS. Ship's engines=32½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=30 revs.
5.30	10·628 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=281·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=506·657 N.M. Depth=800 fms. Drum=32½ revs. per min.=5·7 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=30 revs.

Hour. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	WEDNESDAY, APRIL 5TH, 1893—*contd.*
6.0	13·424 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=284·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=509·453 N.M. Depth=800 fms. Drum=32 revs. per min.=5·63 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=30 revs. Temp. in cable tanks, bottom of cone: fore tank 72½° F., main tank 72° F. Increased ship's engines to 35 revs. per min.
6.30	16·490 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=287·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=512·519 N.M. Depth=800 fms. Drum=35 revs. per min.=6·16 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=33 revs.
6.33	16·796 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=287·4 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=512·825 N.M. Depth=800 fms. Position by stars { Lat. 9° 19·8′ S. Long. 78° 54·4′ W. } Approximate. Current observed since noon=S 27° E., 3·0 N.M.=0·5 KTS.
7.0	19·803 N.M. of Light Deep Sea, No. 1235 Sec. "11," paid out from after tank. Patent log=289·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=515·832 N.M. Depth=850 fms. Drum=37½ revs. per min.=6·6 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=35 revs.
7.30	23·152 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=293·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=519·181 N.M. Depth=850 fms. Drum=37½ revs. per min.=6·6 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=35 revs. NOTE.—The brakes have been right up throughout the day.

S.S. "SILVERTOWN."

Hour. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	WEDNESDAY, APRIL 5TH, 1893—*contd.*
8.0	Moderate SSE wind. Fine, bright and clear. Moderate S'ly swell. Bar. 30·040 (72° F.). Temp. 71° F. dry, 70° F. wet. Sea surface 70° F. 26·436 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=296·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=522·465 N.M. Depth=850 fms. Drum=37 revs. per min.=6·5 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=34 revs.
8.20	Decreased ship's engines to 32 revs. per min.
8.30	29·711 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=299·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=525·740 N.M. Depth=750 fms. Drum=37 revs. per min.=6·5 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=33 to 35 revs.
9.0	32·657 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=301·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=528·686 N.M. Depth=700 fms. Drum=33½ revs. per min.=5·88 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 to 5½ cwt. Strophometer=30 to 32 revs.
9.30	35·600 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=304·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=531·629 N.M. Depth=700 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 to 5½ cwt. Strophometer=29 to 31 revs.
10.0	38·495 N.M. of Light Deep Sea, No. 1235, Sect. "11," paid out from after tank. Patent log=306·8 N.M.

HOUR. P.M.

Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*

WEDNESDAY, APRIL 5TH, 1893—*contd.*

TOTAL CABLE LAID FROM SANTA ELENA HUT=534·524 N.M. Depth=750 fms.

Drum=33 revs. per min.=5·8 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=30 to 32 revs.

10.30 — 41·399 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=309·3 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=537·428 N.M. Depth=750 fms.

Drum=33 revs. per min.=5·8 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=28 to 31 revs.

11.0 — 44·333 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=311·8 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=540·362 N.M. Depth=750 fms.

Drum=33 revs. per min.=5·8 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=30 to 32 revs.

11.30 — 47·223 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=314·3 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=543·252 N.M. Depth=750 fms.

Drum=33 revs. per min.=5·8 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=29 to 30 revs.

MIDNT. — Moderate SSE wind. Fine clear weather. Moderate sea from SSE.

Bar. 30·060 (73° F.). Temp. 70° F. dry, 68°·2 F. wet. Sea surface 70° F.

50·136 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=316·9 N.M.

TOTAL CABLE LAID FROM SANTA ELENA HUT=546·165 N.M. Depth=800 fms.

Drum=33 revs. per min.=5·81 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=28 to 30 revs.

CHANGED COURSE TO S 40° E.

HOUR. A.M.	
	Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*
	WEDNESDAY, APRIL 5TH, 1893—*contd.*
	CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE S. 27° E. (MADE GOOD S. 26° E.)=192·911 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 27° E=183·500 N.M. SLACK=5·1°/o Position { Lat. 9° 48′·5 S. Long. 79° 43′·6 W.
	THURSDAY, APRIL 6TH, 1893.
0.30	53·237 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=319·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=549·266 N.M. Depth=800 fms. Drum=35 revs. per min.=6·16 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=31 to 33 revs.
1.0	56·274 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=322·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=552·303 N.M. Depth=800 fms. Drum=34½ revs. per min.=6·03 KTS. Ship's engines=32 revs. per min. Weight on brake levers = 284 lbs. Dynamometer (lifting). Strophometer=30 revs.
1.30	59·319 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=324·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=555·348 N.M. Depth=860 fms. Drum=34½ revs. per min.=6·03 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=31 to 33 revs.
2.0	62·485 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=327·4 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=558·514 N.M. Depth=920 fms.

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	THURSDAY, APRIL 6TH, 1893—*contd.*
	Drum=$35\frac{1}{2}$ revs. per min.=6·2 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=33 revs.
2.30	65·696 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=330·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=561·725 N.M. Depth=920 fms. Drum=36 revs. per min.=6·33 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=31 to 34 revs.
3.0	68·980 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=332·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=565·009 N.M. Depth=925 fms. Drum=37 revs. per min.=6·51 KTS. Ship's engines=$32\frac{1}{2}$ revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=32 to 35 revs.
3.30	72·264 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=335·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=568·293 N.M. Depth=925 fms. Drum=37 revs. per min.=6·51 KTS. Ship's engines=$32\frac{1}{2}$ revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=33 revs.
4.0	Moderate SSE breeze. Fine and clear. Moderate SSE sea and swell. Bar. 30·000 (71° F.). Temp. 69° F. dry, 68° F. wet. Sea surface 69°·5 F. 75·530 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=338·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=571·559 N.M. Depth=940 fms. Drum=37 revs. per min.=6·51 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=32 to 35 revs.
4 30	78·802 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=340·7 N.M.

HOUR. A.M.	
	Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*
	THURSDAY, APRIL 6TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SANTA ELENA HUT=574·831 N.M. Depth=940 fms. Drum=37 revs. per min.=6·5 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=35 revs.
5.0	82·163 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=343·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=578·192 N.M. Depth=945 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=32½ revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=35 revs.
5.30	85·503 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=346·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=581·532 N.M. Depth=960 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=32½ revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=35 revs. Position by stars { Lat. 10° 13′·3 S. Long. 79° 25′·6 W. Current observed since 6·33 p.m. yesterday=S 13° W, 4·4 N.M.=0·4 KTS.
5.55	Commenced to run water into after ballast tank.
6.0	88·831 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=348·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=584·860 N.M. Depth=950 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=35 revs.
6.3	Increased ship's engines to 35 revs. per min.
6 30	92·397 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=352·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=588·426 N.M. Depth=950 fms.

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	THURSDAY, APRIL 6TH, 1893—*contd.*
	Drum=40 revs. per min.=7·0 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=37 revs.
7.0	96·049 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=355·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=592·078 N.M. Depth=1000 fms. Drum=41½ revs. per min.=7·2 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=38 revs.
7.30	99·545 N.M. of Light Deep Sea, No. 1235, Sec "11," paid out from after tank. Patent log=358·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=595·574 N.M. Depth=1150 fms. Drum=39½ revs. per min.=6·9 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=37 revs.
8.0	Light SE breeze. Fine, bright, and clear. Slight S'ly sea and swell. Bar. 30·080 (71° F.). Temp. 70° F. dry, 68°·5 F. wet. Sea surface 70° F. 103·049 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=361·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=599·078 N.M. Depth=1200 fms. Drum=40 revs. per min.=7·0 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=36 revs.
8.30	106·604 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=363·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=602·633 N.M. Depth=1200 fms. Drum=40 revs. per min.=7·04 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=36 revs. Finished running water into after ballast tank=310 tons weight

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	THURSDAY, APRIL 6TH, 1893—*contd.*
	Temp. in cable tanks, bottom of cone: fore tanks $71\frac{1}{2}$° F., main tank, 71° F.
9.0	110·179 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=366·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=606·208 N.M. Depth=1200 fms. Drum=$40\frac{1}{2}$ revs. per min.=7·1 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=37 revs.
9.30	113·802 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=370·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=609·831 N.M. Depth=1150 fms. Drum=41 revs. per min.=7·22 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=38 revs.
9.42	The following telegram was sent *viâ* Santa Elena:—"Kingsford Ship to Walker Barranco. Ship arrives Chorrillos Buoy Friday morning early. Please arrange watch at Cable Hut on mirror from 7.0 A.M. Ship will want to test, and after final splice Schneider will test from Santa Elena. When not at hut leave cable free. Have testing apparatus ready for me to test Friday afternoon later. Best galvanometer and twenty microfarad condenser."
10.0	117·448 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=373·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=613·477 N.M. Depth=1100 fms. Drum=41 revs. per min.=7·22 KTS. Ship's engines=$35\frac{1}{2}$ revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=37 revs. NOTE.—Brakes right up throughout the morning.
10.30	121·064 N.M. of Light Deep Sea, No 1235, Sec. "11," paid out from after tank. Patent log=376·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=617·093 N.M Depth=1050 fms.

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	THURSDAY, APRIL 6TH, 1893—*contd.*
	Drum=41 revs. per min.=7·22 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=30 to 32 revs. Hove the log and found ship's speed=6 KTS.
11.0	124·666 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=379·4 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=620·695 N.M. Depth=1050 fms. Drum=41 revs. per min.=7·22 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=37 to 39 revs. Position:—Vinda Pass Mt. bearing E, 158 N.M. distant.
11.30	128·297 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=382·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=624·326 N.M. Depth=1050 fms. Drum=41 revs. per min.=7·22 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=35 to 37 revs.
NOON.	(Engineer's time.) 131·666 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=385·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=627·695 N.M. Depth=1050 fms. Drum=38½ revs. per min.=6·76 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=35 to 38 revs. Throughout the watch brakes have been right up. Moderate SSE wind. Fine, bright, and clear. Moderate sea and swell from SSE. Bar. 30·050 (72° F.). Temp. 70° F. dry, 68°·8 F. wet. Sea surface 70° F. Temp. in cable tanks, bottom of cone: fore tank 71½° F., main tank 71½° F.
0.2	(Noon by observations.) 131·840 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=385·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=627·869 N.M.

Hour. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	THURSDAY, APRIL 6TH, 1893—*contd.*
	Depth=1050 fms. CABLE, BY INDICATOR, CORRECTED, PAID OUT SINCE OBSERVED NOON YESTERDAY=154·437 N.M. DISTANCE BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=138·000 N.M. SLACK=11·9 %. Position by observations { Lat. 10° 44′·0 S. Long. 79° 2′·8 W. Current observed since 5.30 a.m.=W, 2·7 N.M.=0·4 KTS.
0.28	Increased ship's engines to 38 revs. per min.
0.30	135·103 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=388·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=631·132 N.M. Depth=1100 fms. Drum=39 revs. per min.=6·86 KTS. Ship's engines=38 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5½ cwt. Strophometer= 35 to 37 revs.
1.0	138·808 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=392·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=634·837 N.M. Depth=1115 fms. Drum=42 revs. per min.=7·4 KTS. Ship's engines=38½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=38 to 39 revs.
1.30	142·521 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=395·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=638·550 N.M. Depth=1100 fms. Drum=42 revs. per min.=7·4 KTS. Ship's engines=38 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=37 to 38 revs.
2.0	146·205 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=398·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=642·234 N.M. Depth=1100 fms. Drum=41½ revs. per min.=7·35 KTS. Ship's engines=38½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=37 revs.

HOUR. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	THURSDAY, APRIL 6TH, 1893—*contd.*
2.7	Reduced ship's engines to 35 revs. per min.
2.30	149·669 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=402·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=645·698 N.M. Depth=1100 fms. Drum=39 revs. per min.=6·86 KTS. Ship's engines=$35\frac{1}{2}$ revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=35 revs.
3.0	153·135 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=405·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=649·164 N.M. Depth=1100 fms. Drum=39 revs. per min.=6·86 KTS. Ship's engines=35 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=35 revs.
3.30	156·587 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=408·4 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=652·616 N.M. Depth=1100 fms. Drum=39 revs. per min.=6·86 KTS. Ship's engines=$35\frac{1}{2}$ revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=33 to 35 revs.
4.0	Moderate SSE breeze. Fine and clear. Moderate sea and swell from SSE. Bar. 30·000 (72° F.). Temp. 70° F. dry, 68°·7 F. wet. Sea surface 70°·0 F. 159·941 N.M. of Light Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=411·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=655·970 N.M. Depth=1050 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=32 revs. Decreased ship's engines to 30 revs. per min.
4.30	162·949 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=414·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=658·978 N.M.

Hour. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	THURSDAY, APRIL 6TH, 1893—*contd.*
	Depth=1050 fms. Drum=34 revs. per min.=5·98 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=30 revs.
5.0	165·909 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=416·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=661·938 N.M. Depth=1050 fms. Drum=$33\frac{1}{2}$ revs. per min.=5·9 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6 cwt. Strophometer=30 revs.
5.30	168·940 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=419·4 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=664·969 N.M. Depth=1000 fms. Drum=$34\frac{1}{2}$ revs. per min.=6·0 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6 cwt. Strophometer=31 revs.
6.0	171·983 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=422·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=668·012 N.M Depth=1000 fms. Drum=$34\frac{1}{2}$ revs. per min.=6·0 KTS. Ship's engines=$30\frac{1}{2}$ revs. per min. Weight on brake levers=284 lbs. Dynamometer=6 cwt. Strophometer=30 revs. Temp. in cable tanks, bottom of cone: fore tank $71\frac{1}{2}$° F., main tank 71° F.
6.23	174·295 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=424·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=670·324 N.M. Depth=1000 fms. Position by stars { Lat. 11° 12′·4 S. / Long. 78° 36′·3 W. Current observed since noon=N 56° E., 1·6 N.M.=0·25 KTS.
6.30	174·913 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=424·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=670·942 N.M. Depth=1000 fms.

HOUR. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	THURSDAY, APRIL 6TH, 1893—*contd.*
	Drum=33 revs. per min.=5·8 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6 cwt. Strophometer=30 revs.
7.0	177·903 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=427·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=673·932 N.M. Depth=1000 fms. Drum=33½ revs. per min.=5·9 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6 cwt. Strophometer=30 revs.
7.30	180·946 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=429·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=676·975 N.M. Depth=1000 fms. Drum=34½ revs. per min.=6·0 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=6 cwt. Strophometer=30 revs.
8.0	Light SE by S wind. Fine, bright and clear. Slight swell from the SSE. Bar. 30·065 (72° F.). Temp. 69° F. dry, 68° F. wet. Sea surface 69°·1 F. 184·006 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=432·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=680·035 N.M. Depth=1000 fms. Drum=34½ revs. per min.=6·0 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6 cwt. Strophometer=30 revs.
8.30	187·037 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=434·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=683·066 N.M. Depth=950 fms. Drum=34½ revs. per min.=6·06 KTS. Ship's engines=31 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6¼ cwt. Strophometer=29 to 31 revs.
9.0	190·088 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=437·5 N.M.

Hour. P.M.	Paying out from Santa Elena to Buoy on Chorrillos End—*contd.*
	THURSDAY, APRIL 6TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SANTA ELENA HUT=686·117 N.M. Depth=950 fms. Drum=34½ revs. per min.=6·06 KTS. Ship's engines=31 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6¼ cwt. Strophometer=29 to 30 revs.
9.30	193·087 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=440·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=689·116 N.M. Depth=900 fms. Drum=34 revs. per min.=5·98 KTS. Ship's engines=31 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6¼ cwt. Strophometer=29 to 31 revs.
9.48	Reduced strain to 5½ cwt.
10.0	196·180 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=442·9 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=692·209 N.M. Depth=850 fms. Drum=35 revs. per min.=6·16 KTS. Ship's engines=31 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5½ cwt. Strophometer=30 to 32 revs.
10.30	199·302 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=445·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=695·331 N.M. Depth=800 fms. Drum=35½ revs. per min.=6·24 KTS. Ship's engines=31 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=29 to 32 revs.
11.0	202·438 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=448·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=698·467 N.M. Depth=700 fms. Drum=35½ revs. per min.=6·24 KTS. Ship's engines=31 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=30 to 32 revs.
11.30	205·531 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=451·0 N.M.

HOUR. P.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	THURSDAY, APRIL 6TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SANTA ELENA HUT=701·560 N.M. Depth=650 fms.
	Drum=35 revs. per min.=6·16 KTS. Ship's engines=31 revs. per min. Weight on brake levers=284 lbs. Dynamometer=nil. Strophometer=29 to 33 revs.
MIDN'T	Light SE by S breeze. Fine and clear, with dew. Slight SSE sea and swell.
	Bar. 30·050 (71° F.). Temp. 68° F. dry, 67° F. wet. Sea surface 67° F.
	208·597 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=453·7 N.M.
	TOTAL CABLE LAID FROM SANTA ELENA HUT=704·626 N.M. Depth=600 fms.
	Drum=34½ revs. per min.=6·06 KTS. Ship's engines=31 revs. per min. Weight on brake levers=284 lbs. Dynamometer=nil. Strophometer=30 to 32 revs.
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A.M.	
0.6	Decreased ship's engines to 27 revs. per min., so as to make the Hormigas de Afuera Islands at daybreak.
0.30	211·369 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=456·2 N.M.
	TOTAL CABLE LAID FROM SANTA ELENA HUT=707·398 N.M. Depth=550 fms.
	Drum=31½ revs. per min.=5·5 KTS. Ship's engines=27 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=27 revs.
1.0	214·035 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=458·5 N.M.
	TOTAL CABLE LAID FROM SANTA ELENA HUT=710·064 N.M Depth=540 fms.
	Drum=30 revs. per min.=5·28 KTS. Ship's engines=27½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=nil. Strophometer=28 revs.

S.S. "SILVERTOWN."

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	FRIDAY, APRIL 7TH, 1893—*contd.*
1.30	216·898 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=461·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=712·927 N.M. Depth=525 fms. Drum=32½ revs. per min.=5·68 KTS. Ship's engines=28 revs. per min. Weight on brake levers=284 lbs. Dynamometer=nil. Strophometer=27 to 30 revs.
2.0	219·711 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=463·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=715·740 N.M. Depth=500 fms. Drum=32 revs. per min.=5·63 KTS. Ship's engines=27½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=nil. Strophometer=28 to 30 revs.
2.30	222·327 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=465·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=718·356 N.M. Depth=525 fms. Drum=29½ revs. per min.=5·2 KTS. Ship's engines=28 revs. per min. Weight on brake levers=284 lbs. Dynamometer=nil. Strophometer=25 to 28 revs.
3.0	224·987 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=468·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=721·016 N.M. Depth=550 fms. Drum=30 revs. per min.=5·28 KTS. Ship's engines=28 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5¼ cwt. Strophometer=25 to 27 revs.
3.30	227·439 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=470·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=723·468 N.M. Depth=575 fms. Drum=27½ revs. per min.=4·85 KTS. Ship's engines=28 revs. per min. Weight on brake levers=284 lbs. Dynamometer=nil. Strophometer=26 revs.

S.S. "SILVERTOWN."

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	FRIDAY, APRIL 7TH, 1893—*contd.*
4.0	Moderate SSE breeze. Fine and clear, with dew. Slight SSE sea and swell. Bar. 30·000 (69° F.). Temp. 67°·4 F. dry, 68°·6 F. wet. Sea surface 67°·2 F. 229·713 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=472·5 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=725·742 N.M. Depth=575 fms. Drum=$25\frac{1}{2}$ revs. per min.=4·45 KTS. Ship's engines=27 revs. per min. Weight on brake levers=284 lbs. Dynamometer=$5\frac{1}{2}$ cwt. Strophometer=22 to 25 revs.
4.12	Increased ship's engines to 32 revs. per min.
4.18	Increased ship's engines to 35 revs. per min.
4.30	232·559 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=475·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=728·588 N.M. Depth=600 fms. Drum=32 revs. per min.=5·6 KTS. Ship's engines=$35\frac{1}{2}$ revs. per min. Weight on brake levers=284 lbs. Dynamometer=$5\frac{1}{2}$ cwt. Strophometer=34 revs.
4.35	Orders given to gradually increase ship's engines to 42 revs. per min.
5.0	236·237 N.M. of Light Deep Sea, No. 1235, Sec. "11" paid out from after tank. Patent log=478·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=732·266 N.M. Depth=500 fms. Drum=42 revs. per min.=7·39 KTS. Ship's engines=42 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=40 revs.
5.30	240·392 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=482·6 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=736·421 N.M. Depth=400 fms. Drum=47 revs. per min.=8·2 KTS. Ship's engines=42 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer= 42 revs.

HOUR. A.M.	**Paying out from Santa Elena to Buoy on Chorrillos End**—*contd.*
	FRIDAY, APRIL 7TH, 1893—*contd.*
5.57	Sighted the Islands of Hormigas de Afuera, bearing N 78° E.
6.0	244·579 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=486·8 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=740·608 N.M. Depth=300 fms. Drum=47½ revs. per min.=8·3 KTS. Ship's engines=42 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=43 revs.
6.30	248·814 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=490·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=744·843 N.M. Depth=200 fms. Drum=48 revs. per min.=8·4 KTS. Ship's engines=42 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=43 revs.
6.34	249·361 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=491·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=745·390 N.M. Depth=200 fms. CHANGED COURSE TO S 63° E (FOR BUOY ON CHORRILLOS END). CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, S 40° E (MADE GOOD S 39¼° E)=199·225 N.M. DISTANCE BY CHART, OVERGROUND ON LAST COURSE, S 40° E=173·150 N.M. SLACK=15·0%. Position { Island of Hormigas de Afuera bearing N 48° E, 7·6 N.M. distant. Lat. 12° 2′·7 S. Long. 77°52′·2 W. No current observed since 6·23 p.m. yesterday.
7.0	252·930 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=494·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=748·959 N.M. Depth=250 fms. Drum=46½ revs. per min.=8·1 KTS. Ship's engines=42 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer= 43 revs.

HOUR. A.M.	**Approaching Buoy on Chorrillos End.**
	FRIDAY, APRIL 7TH, 1893—*contd.*
7.30	257·035 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=498·3 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=753·064 N.M. Depth=250 fms. Drum=46½ revs. per min.=8·1 KTS. Ship's engines=42 revs. per min. Weight on brake levers=284 lbs Dynamometer=5 cwt. Strophometer=42 revs.
8.0	Light S'ly wind. Fine, but overcast and hazy. Slight S'ly swell. Bar. 30·090 (70° F.). Temp. 66°·5 F. dry, 66° F. wet. Sea surface 67° F. 261·202 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=502·1 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=757·231 N.M. Depth=300 fms. Drum=47 revs. per min.=8·27 KTS. Ship's engines=42 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=43 revs. Hormigas de Afuera Islands, bearing N 12° W. Temp. in cable tanks, bottom of cone: fore tank 71° F., main tank 70½° F.
8.20	Sighted buoy on Chorrillos End of cable, bearing S 37° E. CHANGED COURSE. STEERING FOR BUOY.
8.30	265·389 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=506·0 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=761·418 N.M. Depth=300 fms. Drum=47½ revs. per min.=8·3 KTS. Ship's engines=42 revs. per min. Weight on brake levers=284 lbs. Dynamometer (lifting). Strophometer=40 to 42 revs.
8.58	Approaching Buoy "43R" on end of Chorrillos Light Intermediate. Slowed engines to 30 revs. per min. Increased weight on brake levers to 568 lbs.
9.0	269·235 N.M. of Light Deep Sea, No. 1235, Sec. "11," paid out from after tank. Patent log=509·7 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=765·264 N.M. Depth=180 fms.

HOUR. A.M.	**Up to Buoy on Chorrillos End**—*contd.*
	FRIDAY, APRIL 7TH, 1893—*contd.*
	Drum=43½ revs. per min.=7·64 KTS. Ship's engines=30 revs. per min. Weight on brake levers=568 lbs. (brakes right up still). Dynamometer (lifting). Strophometer=30 revs.
9.7	Stopped ship's engines.
9.14	Cable running out slowly to strain. Moving engines, as required, to bring ship up to buoy.
9.20	Lowered surf-boat.
9.25	Ship close to buoy. Patent log hauled in, registering 511·3 N.M. Stopped ship, and sent surf-boat away to dismantle buoy.
9.27	Passed rope from port picking-up drum to boat at buoy.
9.29	Drum rope shackled on to moorings of buoy; commenced to heave in on it with port picking-up drum.
9.32	Slipped Buoy "43R" from moorings.
9.35	Put engine of paying-out machine in gear. Cable over stern now leading almost up and down, and running out occasionally according to strain.
9.36	Moorings of buoy on Chorrillos End coming in board free of strain. Hoisted Buoy "43R" on board.
9.42	Surf-boat hoisted up.
9.47	Light Deep Sea Cable on Santa Elena End over stern sheave stopped, strain 9 to 15 cwt.
9.50	Mushroom on moorings of Buoy "43R" at bows.
9.59	Chorrillos End of cable (Light Intermediate type, buoyed on the 25th March) came in board, and on to port picking-up drum. Stopped picking up on it, as enough in board for splice with Santa Elena End, and bent on stoppers. Mark Buoy "42W," bearing S 77° W.

HOUR. A.M.	**At Buoy on Chorrillos End. Completing Section.**
	FRIDAY, APRIL 7TH, 1893—*contd.*
10.9	Cut 2 fms.=0·002 N.M. off Chorrillos End for damaged sheathing, and attached lead from testing-room.
10.10	Strain on Santa Elena End (Light Deep Sea Cable) over stern varying from 0 to 10 cwt.
10.16	Spoke Chorrillos Hut, and commenced tests on the cable.
10.20	Bent slip rope and port quarter line on to Santa Elena End on stern baulks, and let the ropes take the strain of cable.
10.31	Coiled down on quarter-deck 100 fms. of the Light Deep Sea Cable, from after tank, on Santa Elena End, for passing end of cable round port side of ship from stern to bows, and cut cable. 270·774 N.M. of Light Deep Sea Cable, No. 1235, part of Sec. "11," paid out from after tank on Santa Elena End, by paying-out drum measurement. 270·774 N.M.—0·027 N.M. (17 fms.=0·017 N.M. cut off as spare cable, see note at 11.30 A.M., and 10 fms.=0·010 N.M. for this final splice, see note at 11.30 A.M.)=270·747 N.M. of Light Deep Sea Cable, No. 1235, Sec. "11," laid from after tank, on Santa Elena End, by paying out drum measurement.
	On measuring with paying-out drum the length between the top end of, and the first Factory mile mark (No. 272) in Sec. "11," Light Deep Sea, No. 1235 type, now remaining in after tank, it was found to be 0·662 N.M.; therefore the length of Sec. "11" so far expended is 272 N.M.—0·662 N.M.= 271·338 N.M. by Factory measurement, viz.:—
	Length cut off, for dry end, 11 fms.= 0·011 N.M.+14 fms.=0·014 N.M. for splice with Sec. "6," while loading ship .. = 0·025 N.M.
	Length cut off to-day, 17 fms.=0·017 N.M. for surplus cable on the end+10 fms.= 0·010 N.M. for this final splice .. .. = 0·027 ,,
	TOTAL LENGTH OF LIGHT DEEP SEA, NO. 1235, SEC. "11," LAID IN THE SANTA ELENA CHORRILLOS SEC. .. .. .. =271·286 ,,
	Total .. .. =271·338 N.M.

HOUR. A.M.	**At Buoy on Chorrillos End. Completing Section** —*contd.*
	FRIDAY, APRIL 7TH, 1893—*contd.*
	767·315 N.M. OF CABLE LAID FROM SANTA ELENA HUT TO THIS FINAL SPLICE.
	Length by paying-out Drum measurement of pt., Sec. "11," laid on Santa Elena End = 270·747 N.M.
	Length by Factory measurement of pt. Sec. "11," laid on Santa Elena End .. = 271·286 ,,
	Difference .. .. = 0·539 N.M.
	Factory length of Sec. "11," Light Deep Sea Cable No. 1235 as manufactured = 345·819 N.M.
	Length of Sec. "11," Light Deep Sea Cable, No. 1235 as expended .. .. .. = 271·338 ,,
	TOTAL LENGTH OF LIGHT DEEP SEA, NO. 1235, SEC. "11," NOW REMAINING IN AFTER TANK = 74·481 N.M.
	CABLE BY INDICATOR, CORRECTED, PAID OUT ON COURSE, S 63° E AND VARIOUS = 21·925 N.M.
	NOTE.—From 6.34 a.m. to 8.20 a.m., course S 63° E. From 8.20 a m. courses various, mainly S 37° E.
	DISTANCE, BY CHART, OVERGROUND, ON COURSE, S 63° E AND VARIOUS = 21·200 N.M.
	SLACK = 3·4°/o.
10.33	Commenced passing Santa Elena End (Light Deep Sea Cable) from stern sheave round port side of ship to port bow sheave.
10.38	Santa Elena End brought inboard over port bow sheave and run along upper deck.
10.42	Bent stoppers on Santa Elena End on bow baulks.
10.44	Let go bight of Santa Elena End from stern sheave.
10.57	Bent slip ropes on to both the Santa Elena and Chorrillos ends on bow baulks and let the slips take the strain of the cables, and then bent stoppers on both cables.
11.4	Lead from testing room attached to Santa Elena End.
11.17	Tests on Chorrillos End satisfactory, set about opening it out for splice with Santa Elena End.

HOUR. A.M.	
	At Buoy on Chorrillos End. Completing Section —*contd.*
	FRIDAY, APRIL 7TH, 1893—*contd.*
	Another 3 fms. cut off Chorrillos End, making 5 fms. =0·005 N.M. cut off Chorrillos End to-day, reducing the length of cable from Chorrillos Hut to this final splice to 32·966 N.M., viz. :—
	Shore End, No. 1953B, pt. Sec. "3B" .. = 7·495 N.M.
	Heavy Int., ,, 1952 ,, "3" .. = 3·490 ,,
	Light Int., ,, 1951 ,, "2" .. = 21·981 ,,
	Total .. .. = 32·966 N.M.
11.30	Tests on Santa Elena End satisfactory. Set about opening out Santa Elena End for joint and splice with Chorillos End. 17 fms.=0·017 N.M. for surface cable on the end, and 10 fms.=0·010 N.M. for this final splice cut off Santa Elena End.
11.45	Commenced joint between Chorillos End (Light Intermediate type, No. 1951, pt. Sec. "2"), and Santa Elena End (Light Deep Sea type, No. 1235, pt. Sec. "11.")
	Final Splice.
NOON.	Light SE by S breeze. Fine, but overcast. Warm and sultry. Slight swell from S by E. Bar. 30·070 (72° F.) Temp. 66°·2 F. dry, 65°·4 F. wet. Sea surface 68°·6 F.
P.M. 0.15	Sounded in 133 fms.
1.23	Joint between Chorillos and Santa Elena Ends finished. Commenced splice.
1.58	Splice between Chorrillos and Santa Elena Ends completed. Set about slipping bight.
2.9	Final splice of the Chorrillos—Santa Elena Section slipped successfully.
	Position of final splice } Lat. 12° 16′·2 S. Long. 77° 34′·4 W.

HOUR. P.M.	
	Completing Section. Final Splice—*contd.*
	FRIDAY, APRIL 7TH, 1893—*contd.*
	SUMMARY OF CABLE IN THE CHORRILLOS—SANTA ELENA SECTION.

SANTA ELENA—		
Shore-End, No. 1953A, pt. Sec. "3B"	= 6·000 N.M.	Piece "B" from after tank.
Heavy Int., No. 1952, pt. Sec. "3"	= 3·490 ,,	
Light Int., No. 1951, pt. Sec. "2"	= 1·990 ,,	
Light Deep Sea, No. 1235, pt. Sec. "10"	= 64·970 ,,	
Light Deep Sea, No. 1235, Sec. "6"	= 419·570 ,,	
Light Deep Sea, No. 1235, pt. Sec. "11"	= 271·286 ,,	
Light Int., No. 1951, pt. Sec. "2"	= 21·981 ,,	Piece "A" from fore tank.
Heavy Int., No. 1952, pt. Sec. "3"	= 3·490 ,,	
Shore - End, No. 1953B, pt. Sec. "3B"	= 7·495 ,,	
CHORRILLOS.		
Total	= 800·281 N.M.	

2.11	Set on full speed for Callao.

AT CALLAO.

COALING.

April 7th to April 12th, 1893.

HOUR.	
P.M.	**Coaling.**
	FRIDAY, APRIL 7TH, 1893.
5.20	Let go starboard anchor in $5\frac{3}{4}$ fms. of water in Callao harbour. Draught of ship { For. 22′ 6″. Aft. 25′ 3″. Amount of coal remaining on board = about 650 tons.
6.0	Temp. in cable tanks, bottom of cone: fore tank $71\frac{1}{2}°$ F., main tank 71° F., after tank 72° F.
6.5	Captain of the Port's representative came on board.
6.15	Mr. Miller, of Messrs. Shute & Co., came on board *re* orders for water, &c.
6.16	Capt. Stamm, of the Pacific Steam Navigation Company, came on board *re* coal required for ship.
6.35	Deputy Capt. of the Port came on board respecting ship's papers.
7.22	Mr. H. P. Daley, accompanied by Mr. Miller, left for shore to get ship's mail, and if Mr. Schneider's tests on the completed Chorrillos—Santa Elena Section are satisfactory, to wire Silvergray, London, of the successful completion of the cable.
8.0	Calm, fine and clear. Bar. 30·06 (72° F.). Temp. 65°·2 F. dry, 64°·5 F. wet. Sea surface = 67°·5 F.
9.40	Mr. Daley returned to ship with ship's mail, and having received news from Mr. Schneider at Santa Elena that the tests on the Santa Elena—Chorrillos Section are satisfactory, sent the following telegram:—"Silvergray, London. Chorrillos Santa Elena Section completed to-day. Tests highly satisfactory. All well. Hunter, Callao, Seventh."
	SATURDAY, APRIL 8TH, 1893.
A.M. 7.30	Commenced shipping coal in bunkers.
7.35	Mr. Falshaw, chief officer of S.S. "Relay," came on board.

HOUR. A.M.	**Coaling**—*contd.*
	SATURDAY, APRIL 8TH, 1893—*contd.*
8.0	Light S by E breeze. Fine and clear. Bar. 30·100 (69° F.). Temp. 68°·2 F. dry, 67° F. wet. Sea surface 65°·5 F. Temp. in cable tanks, bottom of cone: fore tank 72½° F., main tank 72° F., after tank 73° F.
8.20	Commenced shipping coal in fore-hold.
8.40	Messrs. H. Kingsford and J. Rymer-Jones left for shore to proceed to Chorrillos Cable Hut, to test the Chorrillos—Santa Elena Section completed yesterday.
9.30	Commenced shipping fresh water.
9.34	A Customs Officer came on board and asked that the shipping of coal should stop, as the Agents (Messrs. Weiss & Co.) had not made any application to the port authorities for permission for the "Silvertown" to ship coal.
10.5	Capt. Hunter, Capt. Morton, and Mr. Daley left for shore to visit the Captain of the Port and Agents.
11.15	Capt. Stamm came on board *re* coaling of ship.
NOON.	Light NNW breeze. Fine and clear overhead, but hazy round bay. Bar. 30·100 (72° F.). Temp. 68° F. dry, 68°·5 F. wet. Sea surface 68°·2 F. Temp. in cable tanks, bottom of cone: fore tank 73° F., main tank 72½° F., after tank 73° F. During this morning all cable in tanks tested, results satisfactory.
3.35	Capt. Hunter, Capt. Morton, and Mr. Daley returned to ship. While on shore, Capt. Hunter arranged with Mr. Kingsford to wire to San Juan del Sur, to secure a lighter for the landing of Shore-End at that place, on or about 21st inst. Capt. Hunter was informed by Capt Lugar of the S.S. "Relay," that on 27th March, a hulk, fitted up as a floating hotel, had been taken to Chorrillos, and had anchored, as far as compass bearings from the Cable Hut could indicate, on or quite close to the Shore-End cable laid at Chorrillos on the 24th March.
5.45	Stopped shipping coal for the day, about 360 tons of coals shipped.

HOUR	
	Coaling—*contd.*
P.M.	SATURDAY, APRIL 8TH, 1893—*contd.*
6.0	Temp. in cable tanks, bottom of cone: fore tank 72°½ F., main tank 72° F., after tank 73° F.
7.55	Messrs. P. Bates, and B. Combe (Navigating Officer) went on shore to meet Capt. Morton and take sights for rating chronometers.
8.0	Light SW breeze. Fine, clear weather. Bar. 30·09 (71° F.). Temp. 68°·4 F. dry, 67°·2 F. wet. Sea surface 65°·2 F. This evening Capt. Hunter received a telegram from Mr. R. K. Gray, giving directions to accept Mr. Kingsford's offer to supply the "Silvertown" with 4 N.M. of Light Intermediate Cable from S.S. "Relay;" to be spliced on to the Santa Elena northern Shore-End to reach 100 fms. or more, so that the Light Deep Sea Cable of the San Juan del Sur—Santa Elena section should not run into less water than 100 fms. at Santa Elena. The length of Light Intermediate on the Santa Elena Northern Shore-End laid on the 1st April, only extending to 29½ fms. of water at present. The 4 N.M. of Light Intermediate Cable to be replaced on board "Relay," with 4 miles of Light Intermediate Cable to be cut off the San Juan del Sur Shore-End if practicable, or with 5 N.M. of Light Deep Sea Cable.
	SUNDAY, APRIL 9TH, 1893.
A.M. 7.5	Resumed shipping coal in fore hold and bunkers.
8.0	Calm. Fine and clear. Bar. 30·150 (72° F.). Temp. 65°·8 F. dry, 65° F. wet. Sea surface 66°·3 F. Temp. in cable tanks, bottom of cone: fore tank 73° F., main tank 72½° F., after tank 73° F.
8.30	Commenced shipping fresh water in main boilers.
9.20	Mr. J. Rymer-Jones returned to ship. The tests taken on the Chorrillos—Santa Elena Sec., yesterday by Messrs. Kingsford and Rymer-Jones are very satisfactory.
9.45	Capt. Morton left to visit the Master of the floating dock.
NOON.	Light NW airs. Fine and clear. Bar. 30·050 (74° F.). Temp. 68°·5 F. dry, 67°·2 F. wet. Sea surface 67° F. Temp. in cable tanks, bottom of cone: fore tank 73½° F., main tank 73° F., after tank 74° F

HOUR.	**Coaling**—*contd.*
P.M.	SUNDAY, APRIL 9TH, 1893—*contd.*
1.50	Finished taking in fresh water in boilers for the day.
3.25	Messrs. Martin, Wells, and Sturrock, of Lima, visited ship.
4.40	Messrs. Pescod (Sen.), and Cannock of the Central and South American Telegraph Company at Barranco, came on board.
6.0	Temp. in cable tanks, bottom of cone: fore tank 73° F., main tank 72½° F., after tank 73½° F.
8.0	Light SE breeze. Fine and clear. Bar. 30·000 (73° F.). Temp. 70° F. dry, 68°·3 F. wet. Sea surface 64°·2 F.
A.M.	MONDAY, APRIL 10TH, 1893.
7.15	Resumed shipping coal in fore hold and bunkers.
8.0	Calm. Fine, but cloudy. Bar. 30·000 (70° F.). Temp. 65·5° F. dry, 64°·8 F. wet. Sea surface 63°·8 F. Temp. in cable tanks, bottom of cone: fore tank 72½° F., main tank 72° F., after tank 73° F.
9.0	Capt. Morton and Mr. R. S. Lloyd left in steam-launch for Chorrillos, to ascertain the position of the hulk anchored on or near the Shore-End, laid on the 24th March, at Chorrillos.
9.2	Mr. F. P. Walker of the Central and South American Telegraph Company came on board.
9.16	Mr. J. Rymer-Jones and Mr. F. P. Walker left ship for S.S. "Relay," to test a piece of Light Intermediate Cable on board the "Relay," 4 N.M. of which are to be transferred to this ship for splicing on to the Santa Elena Northern Shore-End, laid on the 1st inst. (*See* note at 8 p.m., 8/4/93).
NOON.	Calm. Fine and clear. Bar. 30·070 (72° F.). Temp. 73°·5 F. dry, 69°·2 F. wet. Sea surface 65°·5 F.
P.M. 2.27	Capt. Morton and Mr. R. S. Lloyd returned in steam-launch from Chorrillos, having found that the hulk off Chorrillos is anchored to the westward and well clear of the new Shore-End. Capt. Morton placed two mark buoys on the cable, the first, a small wooden buoy with red flag, moored with rope and a 50-lb. shot, about 2 cables length from Cable Hut,

Hour.	Coaling—*contd.*
P.M.	MONDAY, APRIL 10TH, 1893—*contd.*
	and the second a torpedo buoy (No. 81), with red flag, moored with 10 fms. ½" chain, and a mushroom 1 cwt. 3 qrs. 18 lbs., about 4 cables off the hut, and advised the Captain of the hulk of the existence of the cables at the anchorage.
2.30	Ceased pumping fresh water in main boilers for the day.
2.35	Captain Morton with Messrs. Lloyd and Combe left for shore to take sights.
3.37	Steam-launch brought alongside ship a lighter containing 4 N.M. (by S.S. "Relay's" measurement), of Light Intermediate Cable. This piece of cable is part of 9 N.M. of Light Intermediate, Factory No. 876, Sec. "2A," manufactured at Silvertown on the 13th February, 1890, and shipped on board the S.S. "Relay" off Silvertown, in March, 1890.
3.43	Commenced transferring with hand-transferring winch the 4 N.M. of Light Intermediate Cable from lighter to ship's main tank. Unable to measure this piece of cable owing to using the hand gear.
6.13	Finished shipping the 4 N.M. of Light Intermediate Cable ex "Relay" from lighter in main tank. Temp. in cable tank, bottom of cone: fore tank 73° F., main tank 73½° F., after tank 74° F.
6.15	Capt. Morton returned to ship with the Captain of the Port, Messrs. Shute and Drew, and several other visitors, including one or two officers from the S.S.'s "Retriever" and "Relay."
8.0	Light SSE. breeze. Fine and clear. Bar. 30·050 (72° F.). Temp. 68°·2 F. dry, 67°·4 F. wet. Sea surface 63°·2 F.
	TUESDAY, APRIL 11TH, 1893.
A.M. 7.10	Lighter which had contained the 4 N.M. of Light Intermediate Cable left ship in tow of one of the S.S. "Relay's" boats.
7.20	Resumed shipping coal.
8.0	Calm. Fine, but cloudy and very hazy. Bar. 30·080 (62° F.). Temp. 65°·5 F. dry, 65° F. wet. Sea surface 63°·2 F.

Hour.	
A.M.	**Coaling**—*contd.*
	TUESDAY, APRIL 11TH, 1893—*contd.*
	Temp. in cable tanks, bottom of cone: fore tank 72½° F., main tank 73° F., after tank 73½° F.
8.53	Mr. Daley left for shore with ship's mail, and to send the following telegrams:— 1. "Capt. Hunter to Mr. Kingsford, Barranco. In answer to your request, I agree that should an interruption take place in your cables, you can use any section of the duplicate cables for your traffic, except when tests are to be taken." 2. "Capt. Hunter to Mr. Kingsford. 'Silvertown' does not sail till to-morrow afternoon. Please join at noon to-morrow, and advise Bremner."
10.44	Mr. Falshaw, Chief Officer of S.S. "Relay," came on board.
11.40	Mr. Wylie, Chief Engineer of the Chilian mail steamer "Aconcagua," accompanied by Mr. Scott of Callao, came on board.
11.55.	Finished shipping water in main boilers; 90 tons of fresh water shipped in main boilers since Saturday last. Resumed shipping fresh water in ship's fresh water tanks.
NOON.	Calm. Fine, but cloudy and misty. Bar. 30·030 (72° F.). Temp. 70° F. dry, 67°·5 F. wet. Sea surface 67°·6 F. Temp. in cable tanks, bottom of cone: fore tank 73° F., main tank 73° F., after tank 74° F.
P.M. 0.25	Capt. Morton left for shore to meet the Captain of the hulk anchored off Chorrillos, to give him directions as to the positions of the cables laid at Chorrillos.
0.58	Mr. G. W. Bremner, of the Central and South American Telegraph Company, who joins ship for passage to Santa Elena, came on board, accompanied by Mr. Bremner (Senr.), Manager of the Lima Gas Works, and other visitors.
5.15	Ceased shipping coal for the day.
6.0	Temp. in cable tanks, bottom of cone: fore tank 73° F., main tank 73° F., after tank 74° F.

HOUR.	
P.M.	**Coaling**—*contd.*
	TUESDAY, APRIL 11TH, 1893—*contd.*
6.32	While on shore to-day Capt. Hunter has arranged for the settlement of the accounts of Messrs. Shute & Co. and Messrs. Weiss & Co. Capt. Morton has arranged ship's clearance for San Juan del Sur, and received ship's papers from the Port authorities, ready for sailing so soon as the required amount of coals are shipped. The following telegrams have been received and sent to-day:— 1. "Baker, Barranco, to Capt. Hunter, Callao. Following from Mr. Schneider. '375·46 dollars to pay messages. Shall I settle this? Any reduction be made please?'" 2. "Kingsford, Barranco, to Capt. Hunter, Callao. President Scrymser wires me to request you kindly instruct your staff *re* permission work duplicate according your message of this morning." 1. "Capt. Hunter to Schneider, St. Elena. 375·46 dollars for messages can remain unpaid by you. Let the Telegraph Company debit India Rubber Company through New York, if India Rubber Company are to pay for such messages. We are not liable for telegrams sent concerning the work. We sail to-morrow afternoon for Santa Elena. Expect to reach you Saturday." 2. "Capt. Hunter to Schneider, St. Elena. Please note that should interruption of old cable take place, I have arranged that the traffic should be worked through new cable, except when tests are necessary." 3. "Capt. Hunter to Mr. Kingsford. *Re* your telegram. I have instructed our staff at Santa Elena to work new cable should old cable be interrupted, except when tests are necessary."
8.0	Light SSE breeze. Fine, but cloudy and hazy. Bar. 30·050 (68° F.). Temp. 68° F. dry, 67°·6 F. wet. Sea surface 65° F.
	WEDNESDAY, APRIL 12TH, 1893.
A.M.	
7.10	Resumed shipping coal in fore-hold and bunkers.
8.0	Calm, with thick fog. Bar. 30·100 (69° F.). Temp. 63°·8 F. dry, 64°·6 F. wet. Sea surface 63°·8 F.

Hour.	**Coaling**—*contd.*
A.M	WEDNESDAY, APRIL 12TH, 1893—*contd.*
	Temp. in cable tanks, bottom of cone: fore tank 72½° F., main tank 72½° F., after tank 73½° F.
11.35	Finished shipping coal. Total amount of coal shipped since the 7th inst., 1260 tons, viz.: 571 tons in fore hold, and 689 tons in bunkers (44 tons of which are on deck over bunkers). The total amount of coal now on board, 1,960 tons, viz.: in fore hold 751 tons, in bunkers 1,199 tons.
NOON.	Calm. Fine and clear overhead, but very hazy round the bay. Bar. 30·070 (68° F.). Temp. 65°·5 F. dry, 65°·5 F. wet. Sea surface 68° F. Draught of ship { Forward 26′ 0″. Aft 27′ 6″. Temp. in cable tanks, bottom of cone: fore tank 73° F., main tank 72½° F., after tank 73½° F.
P.M.	
0.45	Capt. Stamm came on board to get Chief Engineer's receipt for the 1260 tons of coal.
2.6	Mr. H. Kingsford rejoined ship.

STEAMING FROM CALLAO TO SANTA ELENA

S S. "SILVERTOWN."

April 13th to April 16th, 1893.

HOUR. P.M.	Steaming from Callao to Santa Elena.
	WEDNESDAY, APRIL 12TH, 1893—*contd.*
2.33	Anchor up. Set on full speed to pick up Mark Buoy "42w" let go on 25·3·93.
3.14	San Lorenzo Lighthouse bearing S, 1 N.M. distant.
5.32	Sighted mark buoy on starboard bow.
6.0	Temp. in cable tanks, bottom of cone: fore tank 73° F., main tank 73° F., after tank 73½° F
6.20	Up to mark buoy. Stopped ship and sent surf-boat away to buoy.
6.25	Passed rope from starboard picking-up drum to boat at buoy.
6.27	Drum rope shackled on to moorings of buoy. Commenced to heave in on rope.
6.30	Slipped Buoy "42" from moorings.
6.38	Surf-boat and Buoy "42" hoisted on board.
6.57	Mushroom of moorings at bows.
7.0	Set on for Santa Elena.
8.0	Light S'ly wind. Fine and clear with heavy dew. Slight sea from the S.
	Bar. 30·050 (69° F.). Temp. 66°·3 F. dry, 66° F. wet. Sea surface 65°·3 F.
8.50	Tests taken on all cable in tanks this evening with satisfactory results.
A.M.	THURSDAY, APRIL 13TH, 1893.
5.24	Position by stars { Lat. 10° 56′·5 S. Long. 78° 31′·5 W. }
	Current observed since 3.14 p.m. yesterday = W, 3·0 N.M. = 0·21 KTS.
8.0	Light E'ly breeze. Fine, but overcast, dull, hazy weather. Slight S'ly swell.

HOUR. A.M.	**Steaming from Callao to Santa Elena**—*contd.*
	THURSDAY, APRIL 13TH, 1893—*contd.*
	Bar. 30·075 (70° F.). Temp. 68°·8 F. dry, 68° F. wet. Sea surface 66°·8 F. Temp. in cable tanks, bottom of cone: fore tank 72½° F., main tank 72° F., after tank 73° F.
11.15	Cable in each tank well flushed with water by hose.
NOON.	Light S'ly breeze. Fine, but cloudy and overcast. Calm sea, with slight S'ly swell. Bar. 30·050 (70° F.). Temp. 72°·5 F. dry, 70°·5 F. wet Sea surface 69°·3 F. Position by observations { Lat. 10° 2′·8 S. Long. 79° 2′·7 W. Current observed since 5.24 a.m.=N 47° W, 5·6 N.M.= 0·85 KTS. Distance run from Callao=175 N.M. Since 7 p.m. yesterday =150·5 N.M. Temp. in cable tanks, bottom of cone: fore tank 73° F., main tank 72½° F., after tank 73½° F. During this morning all cable in tanks tested, results satisfactory.
P.M. 6.0	Temp. in cable tanks, bottom of cone: fore tank 72½° F., main tank 73° F., after tank 73½° F.
8.0	Moderate SE by S wind. Fine, but very overcast. Slight following sea. Bar. 30·065 (72° F.). Temp. 71° F. dry, 69°·2 F. wet. Sea surface 73° F.
MIDNT.	Similar weather.
	FRIDAY, APRIL 14TH, 1893.
A.M. 6.0	Overcast, gloomy weather. Observations impracticable.
8.0	Light SE by S breeze. Overcast, dull and hazy weather. Calm sea, with slight S'ly swell. Bar. 30·095 (71° F.). Temp. 70°·2 F. dry, 69°·8 F. wet. Sea surface 67°·3 F. Temp. in cable tanks, bottom of cone: fore tank 73° F., main tank 73° F., after tank 73½° F.

Hour. A.M.	**Steaming from Callao to Santa Elena**—*contd.*
	FRIDAY, APRIL 14TH, 1893—*contd.*
8.30	Sighted Lobos de Afuera Island, bearing N 42° W.
10.6	La Cruz Peak of Lobos de Afuera Island abeam, bearing S 61° W, 2·7 N.M. distant. Current observed since noon yesterday=N, 11·5 N.M.=0·52 KTS.
NOON.	Calm, fine, but very cloudy. Calm sea. Bar. 30·040 (73° F.). Temp. 72° F. dry, 71° F. wet. Sea surface 68°·7 F. Position by observations { Lat. 6° 40′·9 S. Long. 80° 47′·9 W. Distance run since noon yesterday=224·2 N.M. Current observed since 10.6 a.m. to-day=nil. Temp. in cable tanks, bottom of cone: fore tank 73½° F., main tank 73° F., after tank 74° F. All cable in tanks tested this morning, results satisfactory. Slowed engines to 7 knots, so as to make Santa Elena at daylight on Sunday instead of late to-morrow night.
P.M. 1.37	Lion Rock abeam, bearing N 61° E, 3·7 N.M. distant.
6.0	Temp. in cable tanks, bottom of cone: fore tank 73° F main tank 73° F., after tank 73½° F.
6.35	Aguja Point abeam, bearing N 61° E, 3·8 N.M. distant. Current observed since noon=N 13° W, 2·7 N.M.=0·4 KT.
8.0	Moderate SSW breeze. Fine and clear. Calm sea. Bar. 30·000 (72° F.). Temp. 69° F. dry, 69° F. wet. Sea surface 67°·8 F.
MIDNT.	Light NNE breeze. Fine and clear, with heavy dew.
	SATURDAY, APRIL 15TH, 1893.
A.M. 3 45	Sighted Talara Light, bearing N 49° E.
4.50	Talara Light abeam, 11·8 N.M. distant.
5.43	Position by stars { Lat. 4° 30′·0 S. Long. 81° 30′·3 W. Current observed since 6.35 p.m. yesterday=N 43° W, 13·6 N.M.=1·2 KTS.

Hour. A.M.	**Steaming from Callao to Santa Elena**—*contd.*
	SATURDAY, APRIL 15TH, 1893—*contd.*
7.40	Cape Blanco abeam, bearing S 74° E, estimated distance = 14·0 N.M.
8.0	Light NNE breeze. Fine, but cloudy. Calm sea. Bar. 30·072 (70° F.). Temp. 67°·8 F. dry, 67°·2 F. wet. Sea surface 65° F. Temp. in cable tanks, bottom of cone: fore tank 73° F., main tank 72½° F., after tank 73½° F.
NOON	Gentle NNE breeze. Fine and clear. Bar. 30·020 (72° F.). Temp. 74°·5 F. dry, 71°·6 F. wet Sea surface 67°·4 F. Position by observations { Lat. 3° 40′·1 S. Long. 81° 25′·9 W. Distance run since noon yesterday = 183·0 N.M. Current observed since 5.43 a.m. = N 19° W, 7·3 N.M. = 1·1 KTS. Temp. in cable tanks, bottom of cone: fore tank 74° F., main tank 73½° F., after tank 74½° F. During the morning all cable in tanks tested, results satisfactory. As ship is only 98 N.M. from Santa Elena, slowed engines to about 5 knots.
P.M 4.0	Position by double altitudes { Lat. 3° 19′·5 S. Long. 81° 18′·6 W. Current observed since noon = N 57° W, 2 N.M. = 0·5 KTS. Too cloudy for observations this evening.
8.0	Light S'ly wind. Fine and clear. Bar. 30·100 (71° F.). Temp. 71° F. dry, 71° F. wet. Sea surface 69° F.
11.0	Sighted Santa Elena Light bearing N 24° E.
MIDNT.	Light N'ly airs. Fine and clear. Calm sea.

AT SANTA ELENA.

SOUNDING OFF SANTA ELENA

S.S "SILVERTOWN."

APRIL 16TH, 1893.

AT SANTA ELENA.

S.S. "SILVERTOWN."

HOUR. A.M.	SUNDAY, APRIL 16TH, 1893.
4.30	Light variable airs. Fine and clear. Santa Elena Light bearing N 79° E.
5.40	Sighted Buoy 62N; put down on the 31st March in { Lat. 2° 5′·7 S, Long. 81° 5′·5 W } bearing N 4° E.
6.15	Up to Mark Buoy 62N. Stopped ship and sent surf-boat away with end of rope from starboard picking-up drum. Current observed since 4 p.m. yesterday=N 3° E, 14·0 N.M.=1·0 KT.
6.22	Commenced heaving in on drum rope which is now shackled to moorings of buoy.
6.26	Slipped Buoy 62 from moorings.
6.30	Surf-boat and buoy hoisted on board.
6.35	Mushroom of buoy moorings at bows. Set on full speed for Santa Elena Bay.
8.0	Calm. Fine, bright, and clear. Bar. 30·010 (73° F.) Temp. 72° F. dry. 71° F. wet. Sea surface 74° F. Arrived in Santa Elena Bay. Lighthouse bearing S 40° W, 2 N.M. distant. Current observed since 6.15 a.m.=nil. Temp. in cable tanks, bottom of cone: fore tank 74½° F., main tank 74° F., after tank 75° F.
8.15	Stopped ship and lowered surf-boat.
8.20	Loaded surf-boat with sundry provisions brought from Callao for the C. and S. A. Tel. Co.'s staff at Santa Elena, and Mr. Bremner's baggage.
8.27	Shore signalled "Send two boats for baggage."
8.28	Mr. J. Rymer-Jones with jointer went on shore. Telegram No. 14 sent to Silvergray, London, &c. Mr. Bremner left ship.

S.S. "SILVERTOWN."

HOUR. A.M.	SUNDAY, APRIL 16TH, 1893—*contd.*
8.30	Set on full speed for Mark Buoy No. 61M put down on 31st March in Lat. 2° 3′·2 S, Long. 81° 3′·4 W.
9.0	Tests taken on the piece of Light Intermediate cable, ex "Relay," in main tank, results satisfactory.
9.57	Mark Buoy 61M abeam. Stopped ship and sent boat away to put lamps on buoy. Buoy 61M, by bearing of lighthouse, found to be in correct position as given above.
10.16	Boat returned to ship, having put two Miller's globe lamps on buoy, and taken off flag M.
10.20	Boat hoisted up. Set on for position to take soundings
10.51	Sounding 48 S { Lat. 2° 1′·1 S, Long. 81° 3′·9 W } 78 fms. gn. m. and grt. Lighthouse bearing S 26° E. White Spot bearing S 47½° E.
11.10	Sounding 49 S { Lat. 2° 0′·8′ S, Long. 81° 3′·8 W } 73 fms. gn. m. and grt. Lighthouse bearing S 25° E. White Spot bearing S 46½° Mark Buoy 61 bearing S 8° E.
11.19	Commenced to lower moorings of mark buoy.
11.27	Let go Mark Buoy 51B. Position { Lat. 2° 0′·8 S., Long. 81° 3′·8 W. Moorings of buoy:— 1 ⅝″ Bridle. 20 fms. ⅝″ chain. 50 " 4 × 4 buoy rope. 20 " " side " 1 mushroom = 4 cwt. 0 qrs. 26 lbs.
11.30	Lowered boat, and sent it away to put lamps on buoy.
11.38	Boat returned, having put 2 Miller's globe lamps on Buoy 51B.
11.41	Boat hoisted up. Set on to take further soundings.
NOON	Light W'ly airs. Fine and bright, but cloudy. Bar. 30·100 (74° F.). Temp. 72°·2 F. dry, 72°·2 F. wet. Sea surface 75° F. Temp. in cable tanks, bottom of cnoe: fore tank 74½° F., main tank 74° F., after tank 75° F.

S.S. "SILVERTOWN."

Hour. P.M.	SUNDAY, APRIL 16th, 1893—*contd.*
0.1	Sounding 50 S { Lat. 2° 1′·8 S, Long. 81° 4′·3 W } 82 fms. gn. m. and gt. Lighthouse and Buoy 61 in line bearing S 29° E. White Spot bearing S 49½° E.
0.23	Sounding 51 S { Lat. 2° 2′·6 S, Long. 81° 4′·9 W } 107 fms. gn. m. and gt. Lighthouse bearing S 33° E. White Spot bearing S 53½° E.
0.47	Sounding 52 S { Lat. 2° 2′·2 S, Long. 81° 3′·6 W } 86 fms. gn. m. and brk. sh. Lighthouse bearing S 27° E. White Spot bearing S 49½° E.
1.4	Sounding 53 S { Lat. 2° 2′·4 S, Long. 81° 3′·8 W } 95 fms. gn. m. and brk. h. Lighthouse and Buoy 61 in line bearing S 28° E. Mark Buoy 51B bearing N 1° E.
1.22	Sounding 54 S { Lat. 2° 2′·6 S, Long. 81° 3′·7 W } 137 fms. gt. m. Lighthouse and Mark Buoy No. 61 in line bearing S 28½° E.
1.39	Sounding 55 S { Lat. 2° 2′·8 S, Long. 81° 3′·55 W } 137 fms. gn. m. and gt. Lighthouse bearing S 28° E.
1.40	Lowered boat and sent it away to put a blue flag on Mark Buoy No. 61.
1.51	Sounding 56 S { Lat. 2° 3′·1 S, Long. 81° 3′·4 W } 110 fms. gn. m. and grit. Lighthouse bearing S 27° E. Buoy 61 close by, about 300 yards to the S'd.
1.55	Boat returned from Mark Buoy 61 blue flag.
2.0	Boat hoisted up. Set on towards Cable Hut to pick up Messrs. Jones and others.
3.25	Stopped ship and lay to off Cable Hut to await return of surf boat.

Hour P.M.	SUNDAY, APRIL 16TH, 1893—*contd.*
3.45	Hands set about getting baggage and stores out of surf-boat on board.

A permanent joint has to-day been made between the end of the northern Shore-End (laid on the 1st inst.) in hut and No. 6 underground line between Cable Hut and Station; the end of No. 6 land line is sealed in the Cable Station so that ship can test cable during the laying of the 4 knots of Light Intermediate cable, ex S.S. "Relay." No. 2 land line between Cable Hut and Cable Station is soldered to sheathing of the northern Shore-End in Cable Hut as earth wire. Written instructions have been handed to Mr. Ripley, Superintendent of the Santa Elena Station, to break the seal on end of northern Shore-End in station (No. 6 land line) 48 hours after ship's departure and to test cable from time to time, wiring to ship in the event of any noticeable change in the insulation resistance. Mr. Ripley is also instructed to test the Chorrillos—Santa Elena Section alternately with Mr. Walker at Chorrillos.

Mr. Kingsford sent and received the following telegrams:

1. To San Juan del Sur. "We leave here in about an hour. Please send me as soon as possible such particulars as will enable us plot position of Station on Chart. Suggest you measure distance from observation spot to station, and also from station to site of old pier."
2. To San Juan del Sur. "'Relay' will before long substitute shore end type for present intermediate ends at San Juan. It is therefore most desirable that splices Shore-End to Intermediate should not be overlaid by duplicate cable ends. Please put a spar or barrel to mark position of these splices, and also, if you can manage it, put a mark on each cable at about $\frac{3}{4}$ knot from shore. To do so you will probably have to tow a small grapnel with tripping line attached. We expect to anchor about $\frac{3}{4}$ knot from station. At that distance cables are probably 150 fathoms apart, the northern being about 180 fathoms south of the nearer of outlying rocks shown on chart. I do not think that you would find it easy to underrun to $\frac{3}{4}$ knot position. Probably be at San Juan 26th. Please have trench 5 feet deep dug for cable end by 25th. Roadway not to be opened out till 'Silvertown' sighted."

Hour. P.M.	SUNDAY, APRIL 16TH, 1893—*contd.*
	3. To Salina Cruz. " 'Silvertown' staff will have week or more in hut, therefore please arrange at once substantial covering above hut, supported by wooden poles, leaving say 2 feet air space between roof and covering, and latter extending about 6 feet on all sides."
	4. Received from San Juan del Sur. " Distance from station to old pier about 200 yards, and from station to observation spot behind office about 30 yards."
4.0	Hoisted up surf-boat.
4.5	Set on full speed for Buoy 52B on end of light intermediate on St. Elena Northern Shore-End (St. Elena—San Juan del Sur Section) laid on 1st inst.

SANTA ELENA—SAN JUAN DEL SUR SECTION.

SPLICING ON AND LAYING EXTRA LENGTH OF LIGHT INTERMEDIATE FOR THE

SANTA ELENA NORTH LIGHT INTERMEDIATE.

AT BUOYS ON LIGHT INTERMEDIATE.

April 16th to April 17th, 1893.

SPLICING ON AND LAYING EXTRA LENGTH OF LIGHT INTERMEDIATE.

SANTA ELENA NORTH LIGHT INTERMEDIATE.

FOR THE SAN JUAN DEL SUR SECTION.

S.S. "SILVERTOWN."

Hour. P.M.	Splicing on Extra Length of Light Intermediate. Santa Elena North Light Intermediate.
	SUNDAY, APRIL 16TH, 1893—*contd.*
5.15	Passed Buoy 52B on Santa Elena North Light Intermediate.
5.22	Stopped ship about 200 fathoms to westward of buoy, and commenced to lower kedge anchor, attached to 10 fathoms of $\frac{7}{8}''$ chain and 3 × 3 × 4 grappling rope, over port bow sheave with port picking-up drum.
5.26	Kedge anchor on bottom. Put ship's engines astern to bring ship's stern on to buoy.
5.27	Lowered surf-boat and sent it away to dismantle Buoy 52B.
5.33	Stopped paying out on kedge anchor.
5.35	Passed rope from paying-out drum over stern sheave to boat at buoy.
5.37	Drum rope shackled on to moorings of buoy, commenced to heave in on drum rope with paying-out drum.
5.39	Slipped buoy from moorings.
5.43	Buoy 52 hoisted up into port mizen rigging.

HOUR. P.M.	**Splicing on Extra Length of Light Intermediate**—*contd.*
	Santa Elena North Light Intermediate—*contd.*
	SUNDAY, APRIL 16TH, 1893—*contd.*
5.50	Owing to strain on rope attached to moorings, paid out a few fathoms on rope attached to kedge anchor, and took drum rope along main deck to starboard picking-up drum, to assist paying-out drum in heaving in on moorings of buoy attached to Santa Elena End.
5.58	Commenced to heave in slowly on Santa Elena End with paying-out and starboard picking-up drums together, according to strain.
6.5	Paying out on kedge as necessary, and heaving in on drum rope attached to Santa Elena End over stern sheave according to strain, which at times is somewhat heavy. Rope on kedge leading broad off on port bow and mooring chain of buoy on Santa Elena-End, leading well out on port quarter. Light W'ly breeze. Tide setting to the N.W.
6.15	Mushroom of moorings, on Santa Elena End, at stern sheave. Stopped paying-out on kedge anchor. 200 fathoms of grappling rope now outboard on kedge. Stopped picking up on Santa Elena End. Position { Lighthouse bearing S. 13½° E., 6·6 N.M. distant. White spot bearing S. 51° E. Cable House bearing S. 20° E. }
6.30	Slacked out on kedge and resumed heaving in on Santa Elena End. Hoisted up surf-boat.
6.35	Santa Elena-End (Light Intermediate Cable, No. 1951, pt. Sec. "2," laid from main tank on the 1st inst.) came inboard.
6.39	Stopped picking up on Santa Elena End, as enough inboard for splice, and set about bending on rounding and stoppers. Stopped paying out on kedge anchor; about 280 fathoms of grappling rope on kedge so far paid out.
6.45	Paid out to stoppers and rounding on Santa Elena End and took turns off drum.
6.53	Cut 2½ fms. off Santa Elena End for damaged sheathing and attached lead from Testing Room.

HOUR. P.M.	**Splicing on Extra Length of Light Intermediate**—*contd*
	Santa Elena North Light Intermediate—*contd.*
	SUNDAY, APRIL 16TH, 1893—*contd.*
6.59	Tests on Santa Elena End satisfactory.
7.15	Paid out on grappling rope, attached to kedge, to 400 fm. shackle and connected this shackle with a 6″ rope running from port quarter and round port side of ship to port bow sheave.
7.18	Put ship's engines "slow astern."
7.20	Commenced to heave in on 6″ rope leading over port quarter and attached to kedge rope with port picking-up drum, and slipped the bight between grappling rope (on kedge) and 6″ rope from port bow sheave. Stopped ship's engines.
7.24	Stopped heaving in on kedge rope.
7.28	Heaving in on kedge over port quarter as ship drops astern. Little or no strain on cable now. Commenced to open out Santa Elena End for splice with the piece of Light Intermediate cable in main tank, received from S.S. "Relay" on the 10th inst. 9½ fms. cut off Santa Elena End for this splice, making 12 fms.=0·012 N.M. cut off Santa Elena End this evening, and reducing the length of cable laid from Santa Elena Hut for the Santa Elena—San Juan del Sur Section to 9·968 N.M., viz.:—

Shore End, No. 1953B, pt. Sec. "3B" ..	=	7·000 N.M.
Heavy Intermediate, No. 1952, pt. Sec. "3"	=	1·990 „
Light „ „ 1951, „ "2"	=	0·978 „
		9·968 N.M.

7.30	Hauled top end of Light Intermediate, ex S.S. "Relay," from main tank along leads, and four times round paying-out drum to quarter deck, and commenced to open it out for splice with Santa Elena End (L.I., No. 1951, pt. Sec. "2").
7.37	Connection between grappling rope and drum rope on kedge came in board. Stopped heaving in on kedge.
7.40	Santa Elena End leading well out on starboard quarter, and kedge rope over stern leading almost up and down.

HOUR. P.M.	**Splicing on Extra Length of Light Intermediate**—*contd.* **Santa Elena North Light Intermediate**—*contd.* SUNDAY, APRIL 16TH, 1893—*contd.*
7.45	Commenced joint between Santa Elena End (L.I. type) and Light Intermediate, ex "Relay" in main tank. Position of ship { Santa Elena Lighthouse, bearing S 14° E. / Mark Buoy 61, blue flag, ,, N 61½° W.
7.48	Picked up about 10 fathoms on kedge, when strain was felt on rope.
8.0	Light Westerly breeze. Fine, but cloudy. Bar. 30·095 (74° F). Temp. 71°·6 F. dry, 70°·4 F. wet. Sea surface 73°·4 F.
8.30	Cable on Santa Elena End, leading slightly off starboard quarter, and kedge rope leading slightly to port. Made preparations to buoy kedge anchor.
8.56	Joint between Santa Elena End and Light Intermediate in main tank finished and passed. Set about making splice.
9.37	Splice between Santa Elena End and Light Intermediate in main tank completed. Hauled slack of the bight of cable on quarter deck round paying-out drum and back to main tank.
9.48	Took stoppers off cable on stern baulks, and set on "easy ahead." Weight on brake levers = 568 lbs.
9.48	Commenced to pay out on kedge anchor.
9.49	Stopped ship, and ceased paying out on kedge over port quarter.
9.55	Shackled 20 fms. of 4 × 4 side rope, and 20 fms. of ⅝″ chain, attached to Buoy 52M. on to the 400 fms. shackle of grappling rope on kedge, ready for buoying kedge rope.
9.56	Set on "easy ahead," and lifted brakes. SPLICE between Santa Elena Light Intermediate, and Light Intermediate on board, passed out. Position of splice { Lat. 2° 4′·6 S. / Long. 81° 0′·35 W.
9.58	Let go Buoy 52M, with a Holmes' light attached, on grappling rope attached to kedge anchor. Cable running out slowly to strain.

S.S. "SILVERTOWN."

Hour. P.M.	**Laying Extra Length of Light Intermediate.**
	Santa Elena North Light Intermediate—*contd.*
	SUNDAY, APRIL 16TH, 1893—*contd.*
10.6	SHIP ON COURSE, N 60° W. 0·278 N.M. of Light Intermediate, ex S.S. "Relay," paid out from main tank. TOTAL CABLE LAID FROM SANTA ELENA HUT=10·246 N.M. Depth=30 fms. CABLE, BY INDICATOR, PAID OUT ON CURVE ON GETTING ROUND ON TO COURSE=0·278 N.M. DISTANCE, BY CHART, OVERGROUND=0·25 N.M. SLACK=11·2 °/o Lighthouse bearing S 12° E. Position { Lat. 2° 4′·4 S. Long. 81° 0′·4 W.
10.20	1 N.M. of Light Intermediate Cable paid out from main tank. TOTAL CABLE LAID FROM SANTA ELENA HUT=10·968 N.M. Ship's engines=26 revs. per min. Drum=27 revs. per min.=4·7 KTS.
10.30	2 N.M. of Light Intermediate Cable paid out from main tank. TOTAL CABLE LAID FROM SANTA ELENA HUT=11·968 N.M. Ship's engines=27 revs. per min. Drum=29 revs. per min. =5·1 knots. Dynamometer=8½ cwt.
10.33	Decreased ship's engines to 23 revs. per min. Ceased tests and set about sealing end of cable.
10.43	Decreased ship's engines to 21 revs. per min. ("dead slow"). 3 N.M. of Light Intermediate Cable paid out from main tank. TOTAL CABLE LAID FROM SANTA ELENA HUT=12·968 N.M. Ship's engines=25 revs. per min. Drum=27½ revs. per min.=4·8 knots. Dynamometer=8 cwt.
10.45	Increased weight on brake levers to 841 lbs. Approaching end of cable in main tank.
10.49	Stopped ship's engines. End of cable in main tank sealed ready for buoying.

Hour. P.M.	
	Laying Extra Length of Light Intermediate—*contd.*
	Santa Elena North Light Intermediate—*contd.*
	SUNDAY, APRIL 16TH, 1893—*contd.*
10.52	3·663 N.M. of Light Intermediate Cable, ex S.S. "Relay," paid out from main tank. Patent log=3·2 N.M. TOTAL CABLE LAID FROM SANTA ELENA HUT=13·631 N.M. CHANGED COURSE TO TURNING ROUND TO BUOY. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 60° W (made good N 59½° W)=3·385 N.M. DISTANCE, BY CHART, OVERGROUND ON LAST COURSE, N 60° W=3·050 N.M. SLACK=10·9 %. Position { Lighthouse bearing S 26° E. Mark Buoy 61, blue flag, bearing S 51° W. Lat. 2° 2′·9 S. Long. 81° 3′·0 W.
	Buoying Santa Elena North Light Intermediate.
10.54	Checked cable with brakes slightly.
10.55	Ship's engines slow astern.
10.58	Stopped ship's engines.
11.0	End of Light Intermediate cable, Factory No. ? , pt. Sec. "2A," ex S.S. "Relay," from main tank, on Santa Elena End passed off drum. 3·935 N.M. of Light Intermediate type ex. S.S. "Relay," paid out from main tank— Length by S.S. "Relay's" measurement of this piece of Light Intermediate paid out.. =4·0 N.M. Length by drum measurement of this piece of Light Intermediate paid out.. .. .. =3·935 N.M. Difference .. .. .. =0·065 N.M.

HOUR. P.M.

Buoying Santa Elena North Light Intermediate —*contd.*

SUNDAY, APRIL 16TH, 1893—*contd.*

13·903 N.M. OF CABLE LAID FROM SANTA ELENA CABLE HUT FOR THE SANTA ELENA—SAN JUAN DEL SUR SECTION, VIZ.:—

Shore-End, No. 1953B, pt. Sec. "3B"	=7·000 N.M.	laid 1/4/93 Piece "C" from main tank.
Heavy Int., No. 1952, pt. Sec. "3"	=1·990 "	
Light Int., No. 1951, pt. Sec. "2"	=0·978 "	
Light Int., ex S.S. "Relay,"	=3·935 "	laid from main tank to-day.
Total ..	=13·903 N.M.	

CABLE, BY INDICATOR, PAID OUT ON LAST COURSE (CURVE TO BUOY) 0·272 N.M. (0·231 N.M. corrected to 0·18 p.m., 18/5/93.

DISTANCE, BY CHART OVERGROUND ON LAST COURSE (CURVE TO BUOY)=0·260 N.M. (0·220 N.M corrected to 0·18 p.m. 18/5/93).

SLACK=5·0 °/o.

Put brakes down and held cable, to permit starboard quarter line to be bent on cable.

Strain=30 cwt. Engines "half speed astern."

11.3 Put engine of paying-out machine in gear and paid out on cable, to let quarter line take strain.

11.4 Set about bending on to end of cable the mooring chain of buoy. Stopped ship's engines.

11.6 SOUNDING IN 126 FATHOMS GN. M.

11.11 Let go end of cable attached to Buoy 42R, (a Holmes' Light attached to buoy and a cage on flagstaff).

Position of Buoyed End.
- Mark Buoy 61 blue flag bearing S 12° W.
- " " 51 red " " N 18° W.
- Lighthouse bearing S 26° E."

Lat. 2° 2′·8 S.
Long. 81° 3′·3 W.

HOUR. P.M.	
	Buoying Santa Elena North Light Intermediate —*contd.*
	SUNDAY, APRIL 16TH, 1893—*contd.*
	Moorings of buoy:— 1 $\frac{5}{8}''$ bridle. 1 20 fm. length $\frac{5}{8}''$ chain. 3 10 " " " " 1 10 " " " " stray. 50 fms. 4 × 4 buoy rope. 2 20 " " " " 1 mushroom=4 cwt. 2 qrs. 3 lbs.
11.14	Set on slow ahead to get clear of buoy and then lie to for the night.
MIDNT.	Light WSW breeze. Fine, but cloudy. Smooth sea.
	At Buoys on Santa Elena North Light Intermediate.
	MONDAY, APRIL 17TH, 1893.
A.M. 4.0	Light WSW breeze. Fine, but overcast. St. Elena light bearing N 48° E.
5.45	Set on to pick up Buoy No. 52M let go on kedge rope last evening.
6.49	Approaching Buoy 52M. Lowered surf-boat and sent it away to dismantle buoy.
6.51	Passed rope from port picking-up drum to boat at buoy. Stopped ship.
6.58	Drum rope shackled on to moorings of buoy. Commenced to heave in on drum rope, and slipped buoy from moorings.
7.4	Boat and Buoy No. 52 hoisted on board.
7.7	Grappling rope coming in board free of strain.

HOUR. A.M.	**At Buoys on Santa Elena North Light Intermediate**—*contd.*
	MONDAY, APRIL 17TH, 1893—*contd.*
7.11	Strain on grappling rope now varying from 2½ to 5½ tons. Put ship's engines ahead and reduced strain to nil.
7.20	Strain on grappling rope on kedge rose to 5 tons and dropped suddenly to zero. Evidently now clearing kedge from bottom.
7.23	Kedge anchor at bows. Set on for Mark Buoy "61" blue flag.
8.0	Light W'ly breeze. Fine and clear. Bar. 30·130 (73° F.). Temp. 74°·8 F. dry, 72°·8 wet. Sea surface 73° F. Temperature in cable tanks, bottom of cone: fore tank 74° F., main tank 74° F., after tank 74½ F.
8.5	Up to Mark Buoy "61" blue flag. Stopped ship and sent boat away to take lamps off the buoy.
8.15	Surf-boat returned with lamps from buoy. Set on to pick up Mark Buoy 51B, put down yesterday; towing boat alongside.
8.20	Stopped close by Buoy 42R (with cage), on Santa Elena Northern Shore-End, laid yesterday to verify position. Position of Buoy 42R: Lighthouse bearing S 27½° E.; White spot " S 50° E.; Cable house " S 31° E.; Mark Buoy 61 blue bearing S 6½° W.
8.25	Set on again.
8.44	Up to Mark Buoy 51B. Stopped ship and sent surf-boat away with rope from port picking-up drum to buoy.
8.48	Drum rope shackled on to moorings of buoy, commenced to heave in on rope.
8.51	Slipped Buoy 51 from moorings and hoisted it on board.
8.55	Mushroom of moorings at bows.

SOUNDING BETWEEN SANTA ELENA AND SAN JUAN DEL SUR.

S.S. "SILVERTOWN."

APRIL 17TH TO APRIL 22ND, 1893.

SOUNDING BETWEEN SANTA ELENA AND SAN JUAN DEL SUR.

S.S. "SILVERTOWN."

Hour.	MONDAY, APRIL 17th, 1893—*contd.*
A.M.	
8.56	Surf-boat hoisted up. Set on for San Juan del Sur, sounding *en route*
9.42	Sounding 57 S { Lat. 2° 3′·5 S, Long. 81° 7′·1 W } 190 fms. gn. m. and gt. Lighthouse bearing S 46° E. Buoy 42R on cable bearing N 87° E.
10.10	Sounding 58 S { Lat. 2° 2′·2 S, Long. 81° 6′·9 W } 139 fms. gn. gt. m. Lighthouse bearing S 41° E. Buoy 42R on cable bearing S 79° E.
NOON.	Light W'ly airs. Fine, bright, and clear. Smooth sea. Bar. 30·090 (73° F.). Temp. 74°·6 dry, 73°·8 F. wet. Sea surface 72°·4. Position by observations { Lat. 1° 51′·0 S. Long. 81° 20′·0 W. Temp. in cable tanks, bottom of cone: fore tank 74½° F., main tank 74° F., after tank 75° F. During the morning all cable in tanks tested; results satisfactory.
P.M.	
0.21	Sounding 59 S { Lat. 1° 51′·0 S, Long. 81° 20′·0 W } 868 fms. gn. m.
2.46	Sounding 60 S { Lat. 1° 39′·9 S, Long. 81° 27′·5 W } 1827 fms. gn. m.
4.58	Sounding 61 S { Lat. 1° 27′·1 S, Long. 81° 34′·7 W } 1366 fms. gn. m.
6.40	Position by stars { Lat. 1° 17′·5 S. Long. 81° 41′·2 W. Current observed since noon=N 49° W, 4·5 N.M.=0·67 KT.
7.25	Sounding 62 S { Lat. 1° 14′·4° S, Long. 81° 43′·2 W } 933 fms. Lost tube.

S.S. "SILVERTOWN."

HOUR. A.M.

MONDAY, APRIL 17TH, 1893—*contd.*

8.0 Light SW by W breeze. Fine and clear. Bar. 30·04 (74° F.). Temp. 71·5° F. dry, 72°·0 F. wet. Sea surface 70°·7 F.

9.59 Sounding 63 S { Lat. 0° 56′·1 S, Long. 81° 49′·9 W } 819 fms. grt. m.

MIDNT. Moderate SW wind. Fine, but overcast.

TUESDAY, APRIL 18TH, 1893.

A.M.

0 22 Sounding 64 S { Lat. 0° 42′·1 S, Long. 82° 0′·5 W } 790 fms. gt. m.

2·7 Sounding 65 S { Lat. 0° 32′·1 S, Long. 81° 55′·9 W } 736 fms. gt. m.

3.51 Sounding 66 S } Lat. 0° 22′·1 S, Long. 81° 51′·0 W } 441 fms. c. s.

4.0 Moderate SW. breeze. Fine, but cloudy. Calm sea.

8.0 Moderate S'ly breeze. Fine and clear. Bar, 30·075 (75° F.). Temp. 73°·6 F. dry, 73°·2 F. wet. Sea surface 70°·6 F.

Temp. in cable tanks, bottom of cone: fore tank 74° F., main tank 74° F., after tank 74½° F.

8.7 Sounding 67 S { Lat. 0° 0′·2 N, Long. 82° 18′·8 W } 1075 fms. m. and s.

Observed strong current setting to the NE.

10.11 Sounding 68 S { Lat. 0° 1′·7 N, Long. 82° 8′·3 W } 824 fms. m. s.

Observed strong current setting to the NE.

NOON. Moderate SSW. breeze. Fine, bright, and clear. Slight sea from southward.

Bar. 30·030 (74° F.). Temp. 73°·5 F. dry, 73° F. wet. Sea surface 70°·8 F.

Position by observations { Lat. 0° 9′·6 N., Long. 82° 20′·1 W.

Current observed since 6.40 p.m. yesterday, N 3° W, 24·7 N.M.=1·43 KTS.

Tests taken on all cable in tanks this morning with satisfactory results.

S.S. "SILVERTOWN."

HOUR. P M.	TUESDAY, APRIL 18TH, 1893.
2.0	T. Sounding 69 S — Lat. 0° 9′·2 N, Long. 82° 26′·7 W — 1631 fms. s. and m. Bottom temp. by Therm. 87859, 42°·1 F. — Max. 70°·8 F., 8·8 mm. Min. 42°·1 F., 3·5 mm. Surface temp. = 72°·0 F. NOTE.—Some considerable delay took place in taking this sounding owing to the breeze and strong current setting ship to the northward and bringing considerable lead on the sounding wire.
4.0	Light SSW. wind. Fine clear weather.
5.25	Stopped ship for sounding No. 70. Position by stars — Lat. 0° 24′·1 N. Long. 82° 14′·6 W. Current observed since noon = N 9° W, 4·5 N.M. = 0·83 KT.
6.0	Temp. in cable tanks, bottom of cone: fore tank 74° F., main tank 73½° F., after tank 74° F.
6.38	Sounding 70 S — Lat. 0° 24′·1 N, Long. 82° 14′·6 W — 1822 fms. gn. m. Two attempts were made to take this sounding; in the first case the wire fouled ship's propeller and broke, with the loss of 1483 fms. of wire, one tube, and Miller-Casella's deep sea thermometer, No 87859. By the lead of the wire in sounding there appears to be a strong undercurrent, at from 500 to 800 fms. depth, setting to the southward. A surface current of about 1 knot running northwards was observed.
7.5	Set on to the northward. NOTE.—It was now decided to make direct for San Juan del Sur, taking *en route* a sounding here and there as may appear advisable. The soundings taken by S.S. "Relay" (along which route, according to contract, the cable is to be laid), are considered sufficient.
8.0	Light SSW breeze. Fine, bright and clear. Slight sea from the S'd. Bar. 30·000 (75° F.). Temp. 71°·2 F. dry, 70°·9 F. wet. Sea surface 71° F.
MIDNT.	Similar weather.

S.S. "SILVERTOWN."

HOUR. A.M. — WEDNESDAY, APRIL 19TH, 1893.

4.18 — Sounding 71 S { Lat. 1° 40′·5 N
Long. 82° 41′·8 W } 1727 fms. gn. m.

5.45 — Position by stars { Lat. 1° 45′·1 N.
Long. 92° 43′·3 W.
Current observed since 7·5 p.m. yesterday = N 25° E, 10·3 N.M. = 0·98 KT.

6.15 — Crew and one watch of cable hands commenced transferring coal from forehold to bunkers as ship is rather down by the head.

8.0 — Light S'ly wind. Fine and clear. Slight sea from S'd.
Bar. 30·020 (77° F.). Temp. 78° F. dry, 75°·2 F. wet. Sea surface 76°·4 F.
Temp. in cable tanks, bottom of cone: fore tank 73° F., main tank 73° F., after tank 73½° F.

10.5 — Stopped ship in { Lat. 2° 25′·1 N
Long. 82° 54′·1 W } to make Experiment No. 1, with Mr. Buchanan's Deep Sea water bottle with Negretti and Zambra's capsizing thermometer, No. 66732, attached.

10.27 — Lowered bottle and thermometer to 220 fathoms below the surface with 1″ manilla rope, a 36 lb. sinker being attached to the bottom of the frame of the bottle, 5 minutes occupied in lowering bottle.

10.41 — Unable to reduce the angle of the lead of the line to less than 10°, owing to the current and wind from the southward, Sent messenger (a 2¼ lbs. shackle) down the line to free trigger, so as to capsize thermometer and close stopcocks. 58 seconds occupied by the messenger in descent.

10.55 — T. Hauled bottle and thermometer on board again. Temperature by capsizing thermometer = 51°·4 F.
Temp. at surface 81°·5 F. Temperature of air, dry bulb 78 F.
Specific gravity of the water brought up in water bottle = (at temperature of sample) 1·02674.

11.7 — T. Lowered Millar-Casella's Deep Sea Thermometer, No. 90284, to 220 fms.,
Temp. = { Max. 79°·5 F., 9·07 mm.
Min. 50°·6 F., 6·22 mm.

11.19 — Set on on course to the northward again.

HOUR.	WEDNESDAY, APRIL 19TH, 1893—*contd*
NOON.	Moderate SSW breeze. Fine and clear. Smooth sea. Very sultry during the morning. Bar. 29·980 (80° F.). Temp. 82°·4 F. dry, 76°·8 F. wet. Sea surface 81°·5 F. Position by observations { Lat. 2° 31′·2 N. Long. 82° 55′·1 W. Current observed since 5·45 a.m.=N 32° E., 3·9 N.M.= 0·63 KT. Temp. in cable tanks, bottom of cone: fore tank 74½° F., main tank 74° F., after tank 75° F. During this morning all cable in tanks tested in the presence of Mr. Kingsford; results satisfactory.
P.M. 2.10	Stopped ship in { Lat. 2° 49′·2 N. Long. 83° 3′·3 W. } to make experiment No. 2, with Mr. Buchanan's Deep Sea water bottle with Negretti and Zambra's Capsizing Thermometer, No. 66732, attached.
2.19	Lowered bottle and thermometer to 220 fms. below the surface with 1″ manilla rope; a 36 lb. sinker and Millar-Casella's Deep Sea Thermometer No. 90284, being attached to the bottom of the frame of the bottle. 5½ minutes occupied in lowering bottle and thermometers.
2.25	Sent messenger (1 lb. roll of lead) down the line to free trigger, 62 seconds occupied by the messenger in descent. Line leading up and down.
2.39	Hauled bottle and thermometers on board again. Temp. by capsizing thermometer=52° F. Temp. at 220 fms., by Millar-Casella's Thermometer, T. No. 90284= { Max. 79°·6 F, 9·3 mm. Min. 51°·2 F, 6·37 mm. } Sea surface 81°·5 F. Specific gravity of the water brought up in water bottle= (at temperature of sample) 1·02662.
2.45	Set on again on course northward.
3.30	Stopped transferring coal from forehold to bunkers, bunkers now refilled. Total amount of coal transferred to-day=80 tons.
6.0	Temp. in cable tanks, bottom of cone: fore tank 74° F., main tank 74° F., after tank 75° F. Wind changed to the WNW and fell very light, with drizzling rain.

S.S. "SILVERTOWN."

Hour. P.M.	WEDNESDAY, APRIL 19TH, 1893—*contd.*
8.0	Light variable airs. Overcast and gloomy, with rain at times. Calm sea. Bar. 29·940 (79° F.). Temp. 77°·7 F. dry, 74°·5 F. wet. Sea surface 80° F.
MIDNT.	Light to fresh E'ly breeze. Fine, but cloudy. Lightning to the NW.
	THURSDAY, APRIL 20TH, 1893.
A.M. 4.0	Light E'ly airs. Fine, bright and clear.
8.0	Calm. Fine, but cloudy. Very warm and sultry. Smooth sea. Bar. 30·020 (82° F.). Temp. 83° F. dry, 77°·5 wet. Sea surface 82°·8 F. Temp. in cable tanks, bottom of cone: fore tank 74° F., main tank 74° F., after tank 75° F.
9.12	Stopped ship in { Lat. 5° 31′·7 N. Long. 84° 1′·0 W. } to make experiment No. 3 with Mr. Buchanan's water bottle and capsizing thermometer, in precisely the same manner as in experiment No. 2, made yesterday.
9.38	Hauled bottle and thermometers on board again. Temp. at 220 fms. by capsizing thermometer 49°·3 F. T. Temp. at 220 fms. by Millar-Casella's thermometer, No. 90284 { Max. 80°·5 F., 9·25 mm. Min. 48°·8 F., 5·82 mm. Sea Surface 84·2 F. Specific gravity of the water brought up in water bottle =(at temperature of sample) 1·02691.
9.40	Set on on course to the North.
NOON.	Light WSW breeze. Fine, but cloudy. Very warm weather. Slight sea from SW. Bar. 30·020 (82° F.). Temp. 85°·7 dry, 79° F. wet. Sea surface 84°·2 F. Position by observations { Lat. 5° 51′·2 N. Long. 84° 7′·9 W. Distance run since noon yesterday=210 N.M.

S.S. "SILVERTOWN."

Hour.	THURSDAY, APRIL 20TH, 1893—*contd.*
P.M.	
	Current observed since noon yesterday = N 13° W., 11·9 N.M. = 0·5 KTS. Temp. in cable tanks, bottom of cone: fore tank 74½° F., main tank, 74½° F., after tank 75½° F. All cable in tanks tested this morning with satisfactory results.
1.30	Passed a quantity of trees and drift wood being carried west by the current.
2.5	Stopped ship in {Lat. 6° 6′·0 N. Long. 84° 14′·0 W.} for experiment No. 4 with Mr. Buchanan's water bottle and capsizing thermometer attached; mode of working similar in every respect to experiments Nos. 2 and 3.
2.14	Bottle and thermometers lowered to 220 fms. as before. Considerable lead on the line owing to the surface current setting to the NW at about ½ knot, and an under current setting to the S'd.
2.41	Line now leading up and down. Sent messenger down the line to free trigger.
2.54	Hauled bottle and thermometers on board again. Temp. by capsizing thermometer = 49° F. T. Temp. by Millar-Casella's thermometer, No. 90284 {Max. 82°·9 F., 9·67 mm. Min. 48°·7 F., 5·80 mm. Sea surface 84°·3 F.} Specific gravity of the water brought up in water bottle = (at temperature of sample) 1·02688.
2.57	Set on full speed on course.
4.0	Light WNW breeze. Fine and bright, but cloudy.
6.0	Light WNW wind. Squally appearance ahead. Temp. in cable tanks, bottom of cone: fore tank 74½° F., main tank 74° F., after tank 75½° F.
8.0	Light to moderate WNW breeze. Overcast with frequent rain, squalls since 7 p.m. Much lightning to the N and NW. Bar. 29·990 (81° F.). Temp. 81° F. dry, 76°·8 F. wet. Sea surface 83°·4 F.
MIDNT.	Fresh WNW breeze. Fine, but cloudy. Much lightning all round. Thunder in the distance.
A.M.	
4.0	Fresh WNW breeze. Fine and clear. Slight sea from the NW.

S.S. "SILVERTOWN."

Hour. A.M.	FRIDAY, APRIL 21st, 1893.
4.57	Sounding 72 S { Lat. 7° 48′·0 N, Long. 84° 56′·5 W } 721 fms. d. s.
6.27	Sounding 73 S { Lat. 7° 52′·1 N, Long. 84° 58′·5 W } 1191 fms. gn. m.
8·0	Moderate WNW breeze. Fine and clear. Warm and sultry. Slight sea from NW. Bar. 30·000 (82° F.). Temp. 83° F. dry, 78° F. wet. Sea surface 82°·8 F. Temp. in cable tanks, bottom of cone: fore tank 74½° F., main tank 74½° F., after tank 75° F.
NOON.	Moderate WNW breeze. Fine, but cloudy. Slight sea from WNW. Bar. 30·000 (83° F.). Temp. 85° F. dry, 78°·6 F. wet. Sea surface 83°·5 F. Position by observations { Lat. 8° 27′·8 N. Long. 85° 17′·4 W. Distance run since noon yesterday = 173 N.M. Current observed since noon yesterday = S 29° W, 11·0 N.M. = 0·46 KTS. Temp. in cable tanks, bottom of cone: fore tank 75° F., main tank 74½° F., after tank 75½° F. Tests taken on all cable in tanks this morning with satisfactory results.
P.M. 0·18	T. Sounding 74 S A { Lat. 8° 27′·8 N, Long. 85° 17′·4 W } 700 fms. Bottom temp. by Therm. 90284, = 39°·0 F. { Max. 80°·5 F., 9·5 mm. Min. 39°·0 F., 3·8 mm. } Surface temp. = 83°·5 F.
0·47	T. Sounding 74 S B { Lat. 8° 27′·8 N, Long. 85° 17′·4 W } 1445 fms. gn. m. Bottom temp. by Therm. 90284, = 35°·6 F. { Max. 78°·0 F., 8·8 mm. Min. 35°·6 F., 3·09 mm. } Surface temp. = 83°·5 F.
4.15	During the last half hour passed through bands of tide rips, which much affected ship's steering. Wind blowing light from the NW. Swung ship for compass errors.

S.S. "SILVERTOWN."

HOUR. P.M. — FRIDAY, APRIL 21ST, 1893—*contd.*

6.0 — Sighted Cape Blanco bearing N 32° E.
Temp. in cable tanks, bottom of cone: fore tank $74\frac{1}{2}$° F., main tank $74\frac{1}{2}$° F., after tank $75\frac{1}{2}$° F.

8.0 — Light WNW airs. Fine, but overcast and gloomy. Lightning to the NE.
Bar. 30·000 (78° F.). Temp. 82°·5 F. dry, 77°·5 F. wet. Sea surface 82°·5 F.

9.25 — Sounding 75 S { Lat. 9° 32′·6 N, Long. 85° 47′·3 W } 1292 fms. d. gn. m.

MIDNT. — Light variable airs. Cloudy, with rain at times. Vivid lightning to the S.E.

SATURDAY, APRIL 22ND, 1893.

A.M.

4.0 — Light NE breeze. Cloudy, with occasional showers.

7.48 — T. Sounding 76 S {
Lat. 10° 41′·2 N, Long. 86° 36′·3 W } 519 fms. gn. m.
Bottom temp. by Therm. 90284, =41°·6 F. } Max. 78°·8 F., 8·95 mm. Min. 41°·6 F., 4·32 mm.
Surface temp.=81° F.

8.0 — Moderate ENE breeze. Fine, but cloudy.
Bar. 30·060 (80° F.). Temp. 80°·2 F. dry, 77° F. wet. Sea surface 81° F.
Temp. in cable tanks, bottom of cone: fore tank 74° F. main tank 74° F., after tank 75° F.

9.58 — T. Sounding 77 S {
Lat. 10° 46′·8 N, Long. 86° 28′·0 W } 109 fms. gt.
Bottom temp. by Therm. 90284, =57°·0 F. } Max. 78°·7 F., 8·97 mm. Min. 37°·0 F., 7·64 mm.
Surface temp.=80°·0 F.

By the soundings taken this morning ship has evidently been set to the northward of the intended position of soundings; no observations obtainable, as sky very overcast, and the land is entirely obscured by haze.

S.S. "SILVERTOWN."

HOUR.	SATURDAY, APRIL 22ND, 1893—*contd.*
NOON.	Moderate NE breeze. Fine, but cloudy. Hazy over the land, which is just visible only. Bar. 30·040 (82° F.). Temp. 80°·5 F. dry, 76° F. wet. Sea surface 80°·5 F. Position by observations { Lat. 11° 0′·0 N, Long. 86° 25′·0 W } Cape Elena bearing S 80° E. Distance run since noon yesterday = 167 N.M. Current observed since noon yesterday = N 34° W, 28 N.M. = 1·17 KTS. Temp. in cable tanks, bottom of cone: fore tank 75° F, main tank 74½° F., after tank 75½° F. During the morning all cable in tanks tested; results satisfactory.
P.M. 0.6	T. Sounding 78 S { Lat. 11° 0′·0 N, Long. 86° 25′·0 W } 100 fms. gn. m. Bottom temp. by Therm. 90284, = 57°·1 F. { Max. 81°·6 F., 9·4 mm. Min. 57°·1 F., 7·65 mm. } Surface temp. = 80°·5 F. NOTE.—As the 100 fathom line evidently extends further to the westward than expected, it is decided to take soundings both north and south of this position to clearly define the 100 fathom limit before putting into San Juan del Sur.
0.36	Sounding 79 S { Lat. 11° 0′·7 N, Long. 86° 24′·0 W } 96 fms. olive gn. m.
0.58	Sounding 80 S { Lat. 11° 1′·3 N, Long. 86° 22′·9 W } 96 fms. olive gn. m.
1.52	Sounding 81 S { Lat. 11° 5′·8 N, Long. 86° 25′·7 W } 92 fms. gn. m. Cape Elena bearing S. 70° E.
2.38	Sounding 82 S { Lat. 11° 4′·0 N, Long. 86° 22′·8 W } 94 fms. gn. m. Mount Papayal bearing N 67° E.
3.23	Sounding 83 S { Lat. 11° 2′·5 N, Long. 86° 19′·0 W } 87 fms. gn. m. Cape Elena bearing S 70° E. Mount Papayal bearing N 61° E. Current observed since noon = N 28° E., 2 N.M. = 0·59 KT.

Hour. P.M.	SATURDAY, APRIL 22ND, 1893—*contd.*
3.35	Let go Mark Buoy 51H in position of Sounding No. 83. Moorings of Buoy:— 1 ⅝" bridle. 1 10 fms. length ⅝" chain. 1 20 „ „ „ 50 „ 4 × 4 buoy rope 20 „ „ side „ 1 mushroom = 4 cwt 0 qrs. 26 lbs.
3.48	Lowered surf boat, and sent it away to put a dioptric lamp on buoy.
4.0	Surf boat returned, hoisted it up, and set on for next position for sounding.
4.24	Sounding 84 S { Lat. 11° 3'·0 N, Long. 86° 20'·2 W } 86 fms. gn. m.
4.30	Set on for anchorage. Course N 66½° E.
6.0	Temp. in cable tanks, bottom of cone: fore tank 74½° F., main tank 74° F., after tank 75° F.
6.35	Position by land { Mount Orosi bearing S 71° E. Cape Elena, high land bearing S 35° E. Mount Papayal bearing N 54° E. } Distance run by Patent log from Mark Buoy 51H = 16·5 N.M. Changed course to N 61° E. Position of mark buoy now determined as { Lat. 11° 2'·5 N. Long. 86° 19'·0 W. }
8.0	Moderate NE breeze. Fine, but cloudy. Calm sea. Bar. 30·000 (83° F.). Temp. 82° F. dry, 75° F. wet. Sea surface 78°·8 F. Arrived at entrance to San Juan del Sur Bay. As there is no light burning in the Lighthouse, and it being too dark to get any reliable bearings of the points of land, decided to steam out seawards a little and lie to till daylight to-morrow.
MIDNT.	Light ENE wind. Fine, but cloudy. Lightning to the eastward. Ship steaming slow on S 60° W course.

AT SAN JUAN DEL SUR.

April 23rd, 1893.

AT SAN JUAN DEL SUR.

S.S. "SILVERTOWN."

Hour. A.M.	SUNDAY, APRIL 23RD, 1893.
1.0	Put ship on N 60° E course.
4.0	Moderate ENE breeze. Fine, but cloudy. Slight sea from NE.
5.0	Ship now making for anchorage.
7.28	Let go port anchor with 45 fms. of chain in 14 fms. of water in San Juan del Sur Bay. Position of ship { Lighthouse bearing S 76° E. Southern Point bearing S 57° E. Lot's Wife Rock " N 12° W.
7.55	Lowered steam-launch.
8.0	Fresh ENE breeze. Cloudy, with occasional rain squalls. Bar. 30·070 (81° F.). Temp. 81°·5 F. dry, 75° F. wet Sea surface 78°·5 F. Temp. in cable tanks, bottom of cone: fore tank 74½° F., main tank 74° F., after tank 75° F.
10.40	Capt. Hunter and some of the staff left for shore in steam-launch and gig.
NOON.	Moderate ENE breeze. Cloudy and squally. Bar 30·050 (83° F.). Temp. 83°·6 F. dry, 75°·2 F. wet. Sea surface 78°·4 F. Temp. in cable tanks, bottom of cone: fore tank 75° F., main tank 74½° F., after tank 75½° F.
P.M. 1.6	Steam-launch and gig returned. While on shore Capt. Hunter visited the Governor of San Juan del Sur, inspected cable landing place, and arranged for labour for the landing of Shore-End to-morrow.
2.12	Capt. Morton, with Messrs. R. S. Lloyd and B. C. Combe (Navigating Officer), left in steam-launch to sound, and to select and buoy position for ship's anchorage for landing Shore-End.
2.57	Commenced to heave up anchor to move ship into position nearer shore, for the landing of the Shore-End of the San Juan del Sur—Salina Cruz Section.

HOUR. P.M.	SUNDAY, APRIL 23RD, 1893—*contd.*
3.12	Anchor up. Set on slow for position.
3.13	Capt. Hunter and Mr. Daley left for shore to visit Mr. C. Holmann (Agent), and to send telegram, No. 15, to Silvergray, London.
3.20	Let go port anchor in 11 fms., veered chain to 45 fms. Position of ship { Lot's Wife Rock bearing N 21° W. / Southern Point ,, S 40° E. / Cable House ,, S 89° E. The Governor of San Juan del Sur and Messrs. Atherton and Kelly, of the C. and S. A. Tel. Co., accompanied by a number of visitors, came on board.
6.0	Temp. in cable tanks, bottom of cone: fore tank 75½° F., main tank 74½° F., after tank 75½° F.
8.0	Light ENE wind. Fine, bright and clear. Bar. 30·050 (85° F.). Temp. 82°·4 F. dry, 71° F. wet. Sea surface 78°·2 F. NOTE.—The main portion of the cable trench, for Shore-End, has been opened out from the cable office to high water mark to-day by native labourers.
9.59	Mr. Lumsden returned from shore with a note from Mr. Atherton to Capt. Hunter, stating that several bush fires are approaching the cable station, and should they require assistance would Capt. Hunter send men on signal being made. Capt. Hunter at once gave orders for a party of cable hands to go ashore in case their services are required.
10.42	Messrs. F. W. Robinson and J. F. Lumsden, with Dr. Toms and Chief Steward and D. Smith (General Foreman), D. Healey (Carpenter), and 11 cable hands, with buckets and hatchets, and provisions for the night, left in steam-launch for shore.
MIDNT.	Moderate ENE breeze. Fine, but cloudy.

SAN JUAN DEL SUR—SALINA CRUZ SECTION.

LANDING AND LAYING THE SAN JUAN DEL SUR NORTH SHORE END.

LAYING THE SAN JUAN DEL SUR NORTH HEAVY INTERMEDIATE.

LAYING AND BUOYING THE SAN JUAN DEL SUR NORTH LIGHT INTERMEDIATE.

COMPLETING THE NORTH SHORE END ON SAN JUAN BEACH.

APRIL 24TH TO APRIL 26TH, 1893.

S.S. "SILVERTOWN."

Hour. A.M.	MONDAY, APRIL 24TH, 1893.
	Landing the San Juan del Sur North Shore-End.
0.5	Shore party returned to ship, their services not being required on shore at present; but it is arranged that should help from ship be necessary a rocket will be fired.
4.0	Moderate ENE breeze. Fine, but overcast.
6.0	Lowered both cutters and surf boat.
6.25	Commenced coiling hauling-off ropes in cutters, viz., 3 coils 5″ rope and 5 coils $4\frac{1}{2}''$ rope in port cutter, and 5 coils of 4″ and 3 coils $4\frac{1}{2}''$ rope in starboard cutter.
6.35	Put 2 spider wheels, 2 sand anchors, 6 shovels, flags, tools, chain, &c., required on the beach for the landing of Shore-End cable, into surf boat.
6.40	American Mail Steamer "Starbuck" entered the port and anchored to shoreward of ship, off cable landing place.
7.30	Tests made on the spliced section of Shore-End. Heavy Intermediate and Light Intermediate cable, piece "E" in main tank, for San Juan del Sur Northern Shore-End; results satisfactory, and jointer set about sealing the top end ready for landing.
7.35	Mr. B. C. Combe left in steam-launch to ask the Captain of the "Starbuck" to move his ship clear of cable landing, to enable the "Silvertown" to land Shore-End.
7.38	Finished coiling hauling-off ropes in port cutter.
7.56	Finished coiling hauling-off ropes in starboard cutter.
8.0	Light ENE wind. Squally at times. Fine, but cloudy. Bar. 30·045 (79° F.). Temp. 79° F. dry, 78°·8 F. wet. Se[illegible] surface 77° F. Temp. in cable tanks, bottom of cone: fore tank 75°[illegible] main tank $74\frac{1}{2}$° F., after tank $75\frac{1}{2}$° F.

Hour. A.M.	

Landing the San Juan del Sur North Shore-End —*contd.*

MONDAY, APRIL 24TH, 1893—*contd.*

Mr. Combe returned from the "Starbuck" with the information that the captain says he cannot move his ship until noon, he having cargo to discharge.

8.10 Messrs. P. Bates, C. Cazalet, and R. Wood, with Tillyer, foreman's mate, and five cable hands left in steam-launch with surf-boat in tow for the beach, to get all gear in order for landing cable; Capt. Morton and Mr. Combe also proceeding ashore to take sights for time.

8.53 Steam-launch with surf-boat in tow returned to ship. Hands on beach placing spider wheels.

9.13 Steam-launch left with surf-boat and both cutters, containing hauling off lines, in tow, for cable landing place. Written instructions sent to Mr. Bates on the beach to move the southern, or cable, spider wheel more to the north, so that the cable now about to be laid will run to the northward of the buoy marking the line of the existing northern cable here.

9.50 Observed end of rope landed from port cutter at the southern spider wheel (flag "B") on the beach, and hands on beach running rope along beach towards the northern spider wheel (flag "L.")

10.2 Commenced to heave up anchor.
Shore signalled, "Please hoist 'D' if spider is to be moved."

10.10 Anchor aweigh. Set on slow for position nearer beach.

10.15 Let go port anchor in 9½ fms. of water; veered chain to 30 fms. at water's edge.
Wind blowing fresh from ENE (off the land).

10.45 Hoisted ensign at the mizen to call the attention of shore to hand-flag signals.
Cable hands on the beach engaged shifting spider wheels.

[illegible].48 Hoisted recall signal for starboard cutter,

HOUR. A.M.

Landing the San Juan del Sur North Shore-End—*contd.*

MONDAY, APRIL 24TH, 1893—*contd.*

11.0 Observed steam-launch take port cutter in tow for ship, cutter paying out rope from the southern spider wheel towards ship.

11.2 Mail Steamer "Starbuck" left the port.

11.15 Port cutter, in tow of steam-launch, arrived at ship's stern and passed bight of the seventh rope inboard over stern sheave. About $6\frac{1}{4}$ ropes running from ship to spider wheel on beach now.

The remaining rope from port cutter hauled on board, and cutter made fast to boom.

11.47 Observed end of rope from starboard cutter landed at northern spider wheel, and shackled on to the rope on beach that was landed by port cutter. Starboard cutter in tow of steam launch now returning to ship, paying out rope on the way.

Distance between spider wheels = 100 fms.

Distance along the beach from southern spider wheel to Cable Office = 290 fms.; by chart = 250 fms.

Position of this landing place { Lat. 11° 15′·34 N.
Long. 85° 52′·88 W.

Position of Cable Office { Lat. 11° 15′·1 N.
Long. 85° 52′·84 W.

11.55 "All ready" signal hoisted on the beach.

11.59 Starboard cutter, in tow of steam-launch, arrived at bows and passed end of seventh rope from the beach inboard over starboard bow sheave. Rope run along to starboard picking-up drum, thus completing endless messenger between ship and shore.

NOON. Moderate ENE wind, squally at times. Fine, but cloudy.

Bar. 30·050 (83° F.). Temp. 83° F. dry, 81°·2 F. wet. Sea surface 77°·8 F.

Temp. in cable tanks, bottom of cone: fore tank $75\frac{1}{2}$° F., main tank 75° F., after tank $75\frac{1}{2}$° F.

Draught of ship { Fwd. 26′ 0″.
Aft 26′ 0″.

Hour. P.M.	**Landing the San Juan del Sur North Shore-End—** *contd.*
	MONDAY, APRIL 24TH, 1893—*contd.*
0.3	Surf-boat returned from the beach.
0.12	Hoisted up port cutter.
0.15	Got the remaining rope from starboard cutter on board, and hung boat at boom.
0.18	Shore signalled, "Hunter to Robinson. Must have 250 fms. to reach Hut." Replied, "Robinson to Hunter. O.K. will stopper on 150 fms."
0.25	Hove in on slack of messenger over stern sheave with paying-out drum, to make up 160 fms. on the end on board; which is to be made fast to and stoppered along end of cable.
0.30	Hauled top end of Shore-End, No. 1953B, pt. Sec. "3B," piece "E," from main tank, along leads and three times round paying-out drum to stern sheaves, and set about making it fast to messenger.
0.43	Commenced to heave in on messenger over starboard bow sheave with starboard picking-up drum. Tide ebbing. Ship now heading towards landing place.
0.45	Mr. Howard, with jointer Gowing, left in steam-launch for shore, taking surf-boat in tow.
0.50	End of Shore-End cable passed over stern sheave with 1st balloon buoy attached.
0.57	Cable leading close round starboard side of ship, and ship swinging over cable. Stopped heaving in on messenger and paying out on cable.
1.4	Ship now swung back, and clear of cable. Resumed heaving in on messenger and paying out on cable.
1.20	Steam-launch and surf-boat returned to ship, with a note from Capt. Hunter, instructing Mr. Robinson to send 50 men ashore when cable is on beach, and to send food for all hands.

HOUR. P.M.	**Landing the San Juan del Sur North Shore-End—** *contd.*
	MONDAY, APRIL 24TH, 1893—*contd.*
1.30	250 fathoms of cable paid out. Marked cable with spun-yarn, so that shore will know when there is sufficient cable on the beach to run up to Cable Office.
1.43	Steam-launch left with food for shore party; Mr. Lloyd went ashore to determine the position of the two buoys marking old cables near the beach.
2.0	Anchor buoy foul of cable. Stopped picking up on messenger and paying out cable, and sent boat away to clear anchor buoy.
2·5	Set the jib.
2.13	Resumed heaving in on messenger and paying out on cable.
2.19	Ship now swung round on to cable, balloon buoys on cable under ship's bow. Stopped heaving in on messenger and paying out cable.
2.25	Ship swinging clear of cable. Resumed heaving n on messenger and paying out cable.
2·30	Ship now well clear of cable. Hauled down the jib.
2.38	First balloon buoy on end of cable reached the beach. 0·8443 N.M. of Shore-End cable, No. 1953B, pt. Sec. "3B," paid out from main tank, between ship and beach.
2.40	Heaving in on messenger and paying out on cable according to signals from the beach.
3.5	Signalled to shore, "You must let end of cable go through first spider sheave."
3.22	Shore signalled, "Enough cable on shore." 52 balloon buoys outboard on cable. 1·036 N.M. of Shore-End cable paid out from ship to reach cable office – 0·844 N.M. = 0·192 N.M. of cable on beach.

HOUR. P.M.	

Landing the San Juan del Sur North Shore-End—*contd.*

MONDAY, APRIL 24TH, 1893—*contd.*

Position of ship:
- Lot's Wife Rock and No. 1 Point < 19° 3′·0.
- No. 1 Point and No. 2 Point < 47° 13′·0.
- No. 2 Point and Cable Office < 56° 31′·0
- Lighthouse Hill, vertical angle 6° 42′=0·6 N.M. distant.
- Lot's Wife Rock bearing N 31° W.
- Cable House ,, S 87° E.
- Lighthouse ,, S 52° E.

Lat. 11° 15′·22 N.
Long. 85° 53′·72 W.
Distance, by chart, from ship to cable landing place (which bears N 81½° E) =0·84 N.M.

3.30 Forty-three men, made up of cable hands, seamen, firemen, and stewards, left, in charge of Mr. Cottier, 2nd officer, in steam-launch and surf-boat for shore, to assist hands and native labourers on beach.

3 45 Observed all hands on shore, assisted by a few native labourers, hauling cable along beach (at right angles to the line of cable between ship and beach) towards the trench to cable office, laying cable in the water so far out as possible till it reaches the trench.

NOTE.—The cable between ship and beach lies well to the northward of the usual anchorage for vessels.

4.41 Commenced to heave short on anchor.

4.43 Steam-launch, with surf-boat and balloon buoys in tow, came alongside, bringing off a message from Captain Hunter that there is not sufficient Shore-End cable on beach to reach Cable Office, therefore messenger must be bent on to cable on beach again, after which ship to heave in on messenger and pay out cable. About 150 fms. more of cable required on the beach to reach office.

4.44 Stopped heaving in on anchor chain.

4.55 Got the 13 balloon buoys on board, and commenced coiling two coils of 4½″ rope in surf boat. Paid out on anchor chain till 30 fms. shackle at hawsepipe.

Hour. P.M.	**Landing the San Juan del Sur North Shore-End—*contd.***
	MONDAY, APRIL 24TH, 1893—*contd.*
5.15	Steam-launch left for the beach, towing surf-boat, containing the two coils of rope (to complete messenger on beach) and signal lamps, in charge of W. Tillyer.
5.41	Shore hoisted "All ready" signal.
5.45	Commenced to heave in on messenger with starboard picking-up drum, and paying out on Shore-End cable over stern sheave.
6.0	Heaving in on messenger, and paying out on cable, according to signals from the beach.
6.20	Shore signalled, "Enough cable on shore." 55 balloons outboard. 1·096 N.M. of Shore-End cable paid out from main tank —0·844 N.M.=0·252 N.M. of cable on beach to reach Cable Office. Stopped heaving in on messenger and paying out cable.
6.25	Shore signalled, "Send launch."
6.30	Steam-launch and surf-boat left for shore.
6.38	Signalled to shore, "Do not let go hauling-off rope."
6.50	Signalled to shore, "Shall I take off balloon buoys?"
6.56	Steam-launch and surf-boat returned from shore with a message to take balloon buoys off cable.
7.15	Commenced to heave up anchor, so as to make sure of its being clear of the cable when the balloon buoys are let go. Easing out or picking-up on messenger between ship and beach as required.
7.19	Shore signalled, "Send steam launch to pier." Steam-launch left for shore.
7.23	Strain on messenger, $1\frac{1}{2}$ to $2\frac{3}{4}$ tons.
7.31	Anchor clear of the bottom, stopped heaving in on it and set jib to cant ship's head out seawards. Heaving in on messenger slowly, on which there is no strain. Cable leading well forward and slightly under ship on starboard bow.

Hour. P.M.	**Landing the San Juan del Sur North Shore-End**—*contd.*
	MONDAY, APRIL 24th, 1893—*contd.*
7.40	Ship's head paying off to port and seawards. Commenced to slack out on messenger over bow.
7.42	Steam-launch came alongside with 30 of the men that went ashore for work this afternoon.
7.46	Ship now heading to the northward with starboard beam on to cable landing place. Let go port anchor and veered chain to 30 fathoms. Stopped paying out on messenger. Cable over stern, leading well out on starboard quarter. Steam launch left for shore.
7.56	Surf-boat and gig left to cast balloon buoys off cable between ship and the beach.
8.0	Moderate NE breeze and squally. Fine, but cloudy. Bar. 30·000 (83° F.). Temp. 84°·3 F. dry, 75°·2 F. wet. Sea surface 77°·8 F.
8.15	Captain Hunter with all hands returned to ship in steam launch. Note.—On arrival on shore this morning Captain Hunter arranged for 100 native labourers to be at beach when end of cable was landed, to carry bight of the cable along the beach to Cable Office, but only 20 natives could be found in the village. In the first instance, an insufficient length of cable was landed; a further length was consequently hauled ashore, and Captain Hunter then considered there was sufficient cable to reach the office: eventually it was found to be 55 fathoms short of the required amount. The bight of the cable at the landing place is made fast to the sand anchor of the southern spider wheel by a length of rope and chain, and the cable on the end is laid along the beach at low water mark till it reaches the trench opened out to low water mark in front of the Cable Office. The cable is laid and buried in the trench as far up the beach as possible towards the office, the extreme end of the cable reaching high water mark, where it is made fast to a 3-inch plank, and buried till such time as a further length of cable can be spliced on to it.

Hour. P.M.	**Landing the San Juan del Sur North Shore-End—** *contd.*
	MONDAY, APRIL 24TH, 1893—*contd.*
8.20	Steam-launch left for shore to bring off the remainder of shore party, and with instructions to let go the end of the messenger on the beach, so that it may be hauled on board.
9.7	Commenced to heave in on messenger with starboard picking-up drum.
9.15	Steam-launch brought 8 balloon buoys on board.
9.54	End of the rope that formed cable messenger came inboard over starboard bow sheave.
10.25	Cable hands returned to ship in steam-launch, with surf-boat and gig and the remainder of balloon buoys (except 9, 3 of which are on shore) in tow. Tillyer reports that he has collected all the Shore-End landing gear together and taken it to the Cable Office, with the exception of the spider wheels, sand anchors, chain, 1 coil of 4½″ rope and 3 balloon buoys, which are left at cable landing place. Tillyer also reports that the rope which held the bight of cable fast to the sand anchor of the southern spider wheel at cable landing place has this evening broken adrift, the bight of the cable is therefore probably well down the beach a little to seaward of low water mark.
11.6	Steam-launch left for shore to remain at anchorage near pier till ship returns to the port after laying out cable. NOTE.—Some two or three of the firemen who went ashore with the other hands this afternoon are missing.
MIDNT.	Moderate NE wind, squally. Fine clear weather. Ship lying quietly to anchor and Shore-End cable over the stern. No strain on cable. A control test is being kept on cable all night.
	Laying the San Juan del Sur North Shore-End.
	TUESDAY, APRIL 25TH, 1893.
A M 5.30	All hands turned to and set about making ready to get underweigh for laying out cable seawards.

HOUR. A.M.	**Laying the San Juan del Sur North Shore-End—** *contd.*
	TUESDAY, APRIL 25TH, 1893—*contd.*
5.40	Stoppers taken off cables on stern baulks, and engine of paying out machine put out of gear. Weight on brake levers=829 lbs.
5.45	Commenced to heave up anchor. Wind blowing fresh from ENE, and directly seawards. Fine bright morning. An American mail steamer entered the port.
5.54	Anchor up. Ship's head canting seawards. Put engine of paying-out machine in gear again, and prepared to start picking up slack of cable over stern.
5.57	After picking up a fathom or two of cable put engine of machine out of gear and lifted brakes right up. Ship's engines slow astern.
6.2	Dynamometer rose to 40 cwt. Cable commenced running out.
6.3	Set on "Easy ahead" seaward. Let go Buoy "70" blue flag" made fast to cable with 12 fms. $\frac{1}{4}''$ chain.
6.9	SHIP ON COURSE S 80° W. 1·323 N.M. of Shore-End Cable, No. 1953B, pt. Sec. "3B," paid out from main tank, minus 1·096 N.M.=0·227 N.M. of cable laid from anchorage. CABLE, BY INDICATOR, PAID OUT ON CURVE WHILE GETTING ON COURSE=0·227 N.M. DISTANCE, BY CHART, OVERGROUND ON CURVE ROUND ON TO COURSE=0·180 N.M. SLACK=20·6 %. Position { Lat. 11° 15′·35 N. Long. 85° 53′·85 W. Bearings { Lot's Wife Rock N 26° W. No. 3 Point S 34° E.
6.13	Ship's engines increased to 25 revs. per min.
6.20	Ship's engines=26 revs. per min. Drum=27 revs. per min.=4·7 KTS. (approx.).
6.30	Ship's engines=26 revs. per min. Drum=29 revs. per min.=5·0 KTS. (approx.). Patent log=1·5 N.M.

HOUR. A.M.	
	Laying the San Juan del Sur North Shore-End— *contd.*
	TUESDAY, APRIL 25TH, 1893—*contd.*
6.35	3·314 N.M. of Shore-End paid out from main tank minus 1·096 N.M.=2·218 N.M. of cable laid from anchorage. Patent log=1·8 N.M. CHANGED COURSE TO S 60° W. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE S 80° W (MADE GOOD S 83° W)=1·991 N.M. DISTANCE, BY CHART, OVERGROUND ON LAST COURSE S 80° W (MADE GOOD S 83° W)=1·960 N.M. SLACK=1·6 %. Position { Lat. 11° 15′·12 N. Long. 85° 55′·79 W.
	Laying the San Juan del Sur North Heavy Intermediate.
6.38	SPLICE between Shore-End cable No. 1953B, pt. Sec. "3B" and Heavy Intermediate cable No. 1952, pt. Sec. "3" from main tank passed off drum. 3·521 N.M. of Shore-End No. 1953B, part Sec. 3B, paid out from main tank. Patent log=2·1 N.M. Depth=30 fms. (approx.). Length by factory measurement of this piece of Shore-End .. .. =3·500 N.M. Length by drum measurement of this piece of Shore-End .. .. =3·521 " Difference .. .. =0·021 N.M. Position of splice { Lighthouse Hill bearing S 85° E; Mount Papayal bearing N 63° E } Lat. 11° 15′·02 N. Long. 85° 55′·95 W.
7.0	1·829 N.M. of Heavy Intermediate No. 1952, pt. Sec. "3," paid out from main tank. Patent log=3·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR= 5·329 N.M. Depth=32 fms.

Hour. A.M.	
	Laying the San Juan del Sur North Heavy Intermediate—*contd.*
	TUESDAY, APRIL 25TH, 1893—*contd.*
	Drum=28 revs. per min.=4·9 KTS. Ship's engines=26 revs. per min. Weight on brake levers=829 lbs. Dynamometer=9½ cwt. Strophometer=25 revs.
	NOTE.—Brakes right up.
	Position by bearings { Cape Elena bearing S. Mount Papayal bearing N 63½° E, 6·4 N.M distant.
7.30	4·363 N.M. of Heavy Intermediate No. 1952, pt. Sec. "3," paid out from main tank. Patent log=6·3 N.M.
	Depth=40 fms.
	Drum=28½ revs. per min.=5·0 KTS. Ship's engines=26½ revs. per min. Weight on brake levers=829 lbs. Dynamometer=9½ cwt. Strophometer=25 to 28 revs.
8.0	Moderate E'ly breeze. Fine and bright, but cloudy. Smooth sea.
	Bar. 30·030 (79° F.). Temp. 79°·8 F. dry, 74°·3 F. wet. Sea surface=78° F.
	7·089 N.M. of Heavy Intermediate No. 1952, pt. Sec. "3," paid out from main tank. Patent log=8·9 N.M.
	TOTAL CABLE LAID FROM SAN JUAN DEL SUR=10·589 N.M.
	Depth=45 fms.
	Drum=30½ revs. per min.=5·36 KTS. Ship's engines=26 revs. per min. Weight on brake levers=829 lbs. Dynamometer=9¾ cwt. Strophometer=29 revs.
	Laying the San Juan del Sur North Light Intermediate.
8.27	SPLICE between Heavy Intermediate, No. 1952, pt. Sec. "3," and Light Intermediate, No. 1951, pt. Sec. "2," from main tank, passed off drum.
	9·466 N.M. of Heavy Intermediate, No. 1952, pt. Sec. "3," paid out from main tank. Patent log=10·9 N.M.
	Length by Factory measurement of this piece of Heavy Intermediate .. .. = 9·490 N.M.
	Length by Drum measurement of this piece of Heavy Intermediate.. .. .. .. = 9·466 "
	Difference.. .. = – 0·024 N.M.

HOUR. A.M.	
	Laying the San Juan del Sur North Light Intermediate—*contd.*
	TUESDAY, APRIL 25TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SAN JUAN DEL SUR=12·990 N.M. Depth=55 fms.
	Position of splice: {High Land of Cape Elena bearing S 36° E; Mount Orosi bearing S 71° E; Mount Papayal bearing N 61° E} Lat. 11° 10′·4 N. Long. 86° 4′·4 W.
8.30	0·319 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=11·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR=13·309 N.M. Depth=55 fms. Drum=30½ revs. per min.=5·4 KTS. Ship's engines=25 revs. per min. Weight on brake levers=829 lbs. Dynamometer=6 cwt. Strophometer=27 revs.
9.0	2·977 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=13·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR=15·967 N.M. Depth=60 fms. Drum=30 revs. per min.=5·25 KTS. Ship's engines=25½ revs. per min. Weight on brake levers=829 lbs. Dynamometer=lifting to 5 cwt. Strophometer=27 revs.
9.30	5·525 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=16·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR=18·515 N.M. Depth=65 fms. Drum=28½ revs. per min.=5·0 KTS. Ship's engines=25 revs. per min. Weight on brake levers=829 lbs. Dynamometer=lifting to 5 cwt. Strophometer=26 revs.
10.0	8·213 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=18·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR=21·203 N.M. Depth=70 fms. Drum=30 revs. per min.=5·25 KTS. Ship's engines=26 revs. per min. Weight on brake levers=829 lbs. Dynamometer=lifting to 5 cwt. Strophometer=28 revs.

HOUR. A.M.	**Laying the San Juan del Sur North Light Intermediate**—*contd.*
	TUESDAY, APRIL 25TH, 1893—*contd.*
10.30	11·158 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=21·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR=24·148 N.M. Depth=73 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=26 revs. per min. Weight on brake levers=829 lbs. Dynamometer (lifting). Strophometer=30 revs.
10.40	Sighted Mark Buoy 51H.
11.0	14·360 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=23·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR=27·359 N.M. Depth=80 fms. Drum=36 revs. per min.=6·33 KTS. Ship's engines=26 revs. per min. Weight on brake levers=829 lbs. Dynamometer (lifting). Strophometer=30 revs. Mark Buoy 51H bearing S 75° W., 3 N.M. distant.
11.15	About to cut and buoy cable, reduced ship's engines to "dead slow."
11.20	Stopped ship's engines. Control test taken off cable.
11.25	16·737 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=25·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR=29·727 N.M. Abreast of Mark Buoy 51H, bearing N 30° W., 0·5 N.M. distant.
11.35	Engines "half speed ahead."
11.37	Stopped ship's engines.
11.40	Moving engines as required to ease out cable.
11.50	Cable running out very slowly according to strain=from 6 to 7 cwt.
11.53	Put brakes down and held cable.
11.54	Put engine of paying-out machine in gear and commenced to pay out cable.

S.S. "SILVERTOWN."

HOUR.	
A.M.	**Buoying San Juan del Sur North Light Intermediate.**
	TUESDAY, APRIL 25TH, 1893—*contd.*
11.58	Stopped cable with brakes, and bent on port quarter line
11.59	Paid out on cable till quarter line took the strain.
NOON.	Fresh ENE wind. Fine clear weather. Slight sea from ENE. Bar. 30·000 (82° F.). Temp. 82°·3 F. dry, 76° F. wet. Sea surface 79°·2 F.
P.M.	
0.4	Bent slip rope and buoy mooring chain on to cable on stern baulks.
0.5	Cut cable and set about sealing end. 17·990 N.M. of Light Intermediate Cable, No. 1951, pt. Sec. "2," paid out from main tank. TOTAL CABLE LAID FROM SAN JUAN DEL SUR FOR THE SAN JUAN DEL SUR—SALINA CRUZ SECTION=30·980 N.M., viz. :—
	Shore-End, No. 1953B, pt. Sec. "3B,"=3·500 N.M. } Part of Piece "E" in main tank.
	Heavy Int. ,, 1952 ,, ,, "3,"=9·490 ,, } Part of Piece "E" in main tank.
	Light ,, ,, 1951 ,, ,, "2,"=17·990 ,,* } Part of Piece "E" in main tank.
	Total.. .. =30·980 ,,
	4·0 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," now remaining in main tank (remainder of piece "E.") This piece of Light Intermediate is to be transferred to the S.S. "Relay" later, to replace the length supplied to this ship by the "Relay" on the 10th inst. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, S 60° W (MADE GOOD=S 59° W)=27·666 N.M. (CORRECTED TO 7TH MAY=27·652 N.M.). DISTANCE, BY CHART, OVERGROUND ON LAST COURSE, S 60° W (MADE GOOD S 59° W)=26·050 N.M. SLACK=6·14 °/ₒ.
0.10	Sealed end of cable.
0.15	Let go end of cable attached to Buoy 52 W (with cage above flag).

* See later for alterations to this length.

HOUR. P.M.

Buoying San Juan del Sur North Light Intermediate—*contd.*

TUESDAY, APRIL 25TH, 1893—*contd.*

Position of buoyed end { Lat. 11° 1′·6 N. Long. 86° 20′·2 W.
Mount Papayal bearing N 61° E.
,, Orosi bearing S 86° E.
High Land of Cape Elena bearing S 73° E.
Moorings of buoy:—
1 $\frac{5}{8}$″ bridle.
1 10 fms. length $\frac{5}{8}$″ chain.
1 15 ,, ,, $\frac{5}{8}$″ ,, (stray).
100 ,, 4 × 4 buoy rope.
1 mushroom = 4 cwt. 1 qr. 16 lbs.

0.26 T. Sounding 85 S { Lat. 11° 1′·6 N Long. 86° 20′·2 W } 92 fms. gn. m.
Bottom temp. by Therm. 90284, = 60°·7 F. } Max. 79°·5 F., 9·08 mm. Min. 60°·73 F., 8·44 mm.
0.30 Surface temp. = 79°·2 F.

0.55 Set on to take lamp off Mark Buoy 51H, put down at 3.35 P.M. on 22nd inst.

Close by Mark Buoy. Stopped ship and sent boat away to buoy.
Mark Buoy 51H and Cable Buoy 52W in line, bearing S 41° W.

Completing the San Juan del Sur Northern Shore-End on Beach.

1.7 Boat returned to ship with lamp from buoy.

1.12 Boat hoisted up. Set on for anchorage in San Juan del Sur Bay again.

2.30 Temp. in cable tanks, bottom of cone: fore tank 75½° F., main tank 75° F., after tank 75½° F.

4.40 Sealed the end of Shore-End, No. 1953B, pt. Sec. "3B," Piece "F," in fore tank ready for cutting off a piece to splice on to the end of the Shore-End, landed on the beach here yesterday.

Hour. P.M.	**Completing the San Juan del Sur Northern Shore-End on Beach—*contd.***
	TUESDAY, APRIL 25TH, 1893—*contd.*
4.58	Let go port anchor in 11 fms. in San Juan del Sur Bay, veered chain to 45 fms.
5.5	Hoisted recall signal for steam-launch anchored off the pier.
5.10	Lowered port cutter. Position of ship { Lot's Wife Rock bearing N 22° W. / Lighthouse bearing S 67° E.
6.2	Mr. Lumsden, on the beach, signalled that 330 feet is the distance from the end of cable on beach, landed yesterday, to Cable Office.
6.20	Cut 65 fathoms=0·064 N.M. off Salina Cruz Shore-End, No. 1953B, pt. Sec. "3B," Piece "F," in fore tank, and coiled it in port cutter. This length goes ashore to be spliced on to the San Juan del Sur Northern Shore-End, landed yesterday, to make up sufficient Shore-End type of cable to reach Cable Office. 3·936 N.M. of Shore-End cable, No. 1953B, pt. Sec. "3B," now remain in fore tank for the Salina Cruz Shore-End (Piece F, in fore tank).
6.25	Mr. F. W. Robinson left in steam-launch for shore, taking in tow port cutter, containing the piece of Shore-End cable and 4 cable hands, surf-boat, containing 10 cable hands, with all the necessary lamps and jointing and splicing tools, and gig with 5 cable hands.
7.30	Mr. Holman, Agent and American Consul, and Mr. Way, of the C. and S. A. Tel. Co., came on board.
8.0	Fresh NE wind. Fine and clear. Bar. 30·000 (83° F.). Temp. 83°·2 F. dry, 74°·5 F. wet. Sea surface 76°·2 F.
8.30	Steam-launch with port cutter in tow returned to ship, bringing off the 2 spider-wheels, 2 sand anchors, 1 coil of $4\frac{1}{2}''$ rope, 2 or 3 lengths of chain, and 3 balloon buoys, that were left on the beach yesterday after landing Shore-End.

HOUR. P.M.	**Completing the San Juan del Sur Northern Shore-End on Beach**—*contd.*
	TUESDAY, APRIL 25TH, 1893—*contd.*
8.55	Shore signalled, " Have you launch and cutter alongside ?" Replied " Yes."
9·16	Steam-launch and cutter hoisted on board.
10.20	D. Smith (general foreman) and 12 cable hands returned from shore, having completed the work of splicing on the piece of cable to the Shore-End, and bringing off with them the remainder of the Shore-End landing gear, splicing tools, &c.
MIDNT.	Fresh NE breeze. Fine and clear.
	WEDNESDAY, APRIL 26TH, 1893.
A.M. 0.45	Staff, jointers, and cable hands returned in gig. NOTE.—The length of Shore-End cable taken ashore yesterday afternoon has been spliced on to the end, on the beach, of the San Juan del Sur North Shore-End landed on the 24th inst., and the cable laid in the trench right up to the Cable Office, into which the end of the cable was taken through the floor. Five fms.=0·005 N.M. for the splice was cut off the end of the cable that was laid on the 24th inst., and the 0·064 N.M. length of Shore-End cable taken ashore by the boat was reduced by 9 fms. to 0·055 N.M., being 9 fms. in excess of the length required to complete cable to office. While making the joint of this splice an examination was made of the beach from opposite office to the cable landing place, to see if the Shore-End was exposed anywhere along the beach. Only a few feet of the cable was found uncovered, where it lay on some stones at the site of the old pier, and arrangements were made with Mr. Atherton, Superintendent of the Cable Station, to have these stones removed and cable buried as soon as possible. Cable hands also collected all the gear that had been left at cable landing place, and took it down to ship's boats. On the splice (which lies

HOUR.
A.M.

Completing the San Juan del Sur Northern Shore-End on Beach—*contd.*

WEDNESDAY, APRIL 26TH, 1893—*contd.*

at about high-water mark on the beach) being finished (at about 9.30 P.M.), the men were sent on board with all gear, and Mr. Rymer-Jones tested the cable, from office to the end of the Light Intermediate (buoyed at 0.15 P.M. yesterday). Owing to the faulty condition of the batteries and instruments at the station, considerable delay took place in making the tests, which were not, from the same reason, altogether very satisfactory, but Messrs. Kingsford and Rymer-Jones satisfied themselves that the cable is in good condition. Arrangements were also made with Mr. Atherton to have the Shore-End cable in the trench outside office well buried, by natives, as early as possible after daylight.

Total length of cable now laid out from San Juan del Sur Hut for the San Juan del Sur—Salina Cruz Section=31·030 N.M., viz.:—

Shore-End,	No. 1953B,	pt.	Sec.	"3B"	=0·055 N.M.		Part of Piece "F" in fore tank.
"	" "	"	"	"	= 3·495	"	Part of Piece "E" in main tank.
Heavy Int.	" 1952	"	"	"3"	= 9·490	"	
Light "	" 1951	"	"	"2"	=17·990	"	
				Total	=31·030 N.M.		

SOUNDING BETWEEN SAN JUAN DEL SUR AND SALINA CRUZ.

SS. "SILVERTOWN."

APRIL 26TH TO APRIL 30TH, 1893.

SOUNDING BETWEEN SAN JUAN DEL SUR AND SALINA CRUZ.

SS. "SILVERTOWN."

Hour. A.M.	WEDNESDAY, April 26th, 1893—*contd.*
1.5	Hoisted up boats, and prepared to get under weigh.
1.15	Weighed anchor, and canted ship.
1.30	Set on full speed for Salina Cruz, sounding *en route*. Position of departure: Lighthouse bearing S 70° E., 2 N.M. distant.
4.0	Moderate NE wind. Fine and clear. Slight sea and swell from NE.
7.2	Sounding 86 S { Lat. 11° 2′·9 N, Long. 86° 45′·0 W } 94 fms. n. sn.
8.0	Light NE wind. Fine and clear. Bar. 30·050 (80° F.). Temp. 80°·5 F. dry, 75°·3 F. wet. Sea surface 79°·2 F. Temp. in cable tanks, bottom of cone: fore tank 75° F., main tank 74½° F., after tank 75° F.
11.0	Commenced to pump water out of cable tanks, owing to the strong smell coming from the tanks.
11.10	T. Sounding 87 S { Lat. 11° 17′·6 N, Long. 87° 2′·6 W } 256 fms. gn. m.; Bottom temp. by Therm. 90284 = 51°·6 F. { Max. 75°·2 F., 7·63 mm. Min. 51°·6 F., 6·42 mm. }; Surface temp. = 81°·8 F.
NOON.	Strong NE by E wind. Fine and clear. Slight sea from NE. Bar. 30·000 (83° F.). Temp. 83°·5 F. dry, 74°·2 F. wet. Sea surface 81°·8 F. Position by observations { Lat. 11° 20′·0 N. Long. 87° 7′·5 W. } Current observed since 1.30 a.m. = N 85° W, 10 N.M. = 0·95 KT. Temp. in cable tanks, bottom of cone: fore tank 75½° F., main tank 75° F., after tank 76° F. Tests taken on all cable in tanks this morning with satisfactory results.

S.S. "SILVERTOWN."

HOUR. P.M.	WEDNESDAY, APRIL 26TH, 1893—*contd.*
0.11	Sounding 88 S { Lat. 11° 20′·0 N / Long. 87° 7′·5 W } 347 fms. dk. gn. m. and s.
2.0	Wind fallen very light, and shifted to the SE.
2.48	Sounding 89 S { Lat. 11° 39′·5 N / Long. 87° 18′·3 W } 136 fms. gn. m. and s.
3.45	Finished pumping water out of cable tanks.
4.0	Light SE airs. Fine, bright and clear. Calm sea.
5.35	Sounding 90 S { Lat. 12° 1′·7 N / Long. 87° 29′·8 W } 75 fms. gt. gn. m.
6.0	Temp. in cable tanks, bottom of cone: fore tank 75½° F., main tank 75° F., after tank 76½° F.
6.50	Position by stars { Lat. 12° 0′·2 N. / Long. 87° 41′·4 W. } Current observed since noon=N 48° W, 7·8 N.M.=1·14 KTS.
8.0	Light SW breeze. Fine clear weather. Bar. 29·990 (81° F.). Temp. 81° F. dry, 76°·8 F. wet. Sea surface 81° F.
9.27	Sounding 91 S { Lat. 11° 55′·6 N / Long. 88° 1′·5 W } 997 fms. m.
11.55	Sounding 92 S { Lat. 12° 9′·5 N / Long. 88° 11′·0 W } 417 fms. s m.
MIDNT.	Light WNW breeze. Fine clear weather.
	THURSDAY, APRIL 27TH, 1893.
A.M. 1.41	Sounding 93 S { Lat. 12° 18′·7 N / Long. 88° 18·2 W } 589 fms. stf. gn. m.
4.0	Light WNW airs. Fine, bright and clear.
4.47	Sounding 94 S { Lat. 12° 16′·5 N / Long. 88° 41′·9 W } 597 fms. Lost 316 fms. of wire and tube
7 36	Sounding 95 S { Lat. 12° 23′·2 N / Long. 89° 3′·8 W } 673 fms. gn. m.

S.S. "SILVERTOWN."

HOUR. A.M	THURSDAY, APRIL 27TH, 1893—*contd.*
8.0	Calm. Fine and clear. Very warm and sultry. Smooth sea. Bar. 30·050 (81° F.). Temp. 83° F. dry, 78° F. wet. Sea surface 81°·5 F. Temp. in cable tank, bottom of cone: fore tank 76½° F., main tank 76° F., after tank 77° F.
9.30	Commenced transferring from main tank to starboard after-lower pocket, the 4 N.M. of Light Intermediate Cable, No. 1951, pt. Sec. "2," originally part of San Juan del Sur North Shore-End, and which is eventually to be transferred to S.S. "Relay."
10.39	T. Sounding 96 S { Lat. 12° 26′·5 N, Long. 89° 27′·6 W } 1329 fms. gn. m.; Bottom temp. by Therm. 90284 =35°·7 F. { Max. 86°·1 F., 10·18 mm. Min. 35°·7 F., 3·10 mm. }; Surface temp.=83°·6 F.
NOON.	Light ESE breeze. Fine, bright and clear. Calm sea. Bar. 30·040 (85° F.). Temp. 83°·5 F. dry, 74°·8 F. wet. Sea surface 85°·0 E. Position by observations { Lat. 12° 32′·9 N. Long. 89° 35′·5 W. Current observed since 6.50 p.m. yesterday=N 76°W, 11·0 N.M.=0·64 KTS. Temp. in cable tanks, bottom of cone: fore tank 77½° F., main tank 77° F., after tank 78° F. Tests taken on all cable in tanks this morning, results satisfactory.
P.M. 0.30	T. Sounding 97 S { Lat. 12° 32′·9 N, Long. 89° 35′·5 W } 1352 fms. gn. m.; Bottom temp. by Therm. 90284 =35°·6 F. { Max. 87°·8 F., 10·49 mm. Min. 35°·6 F., 3·6 mm. }; Surface temp.=85°·0 F.
2.28	Sounding 98 S { Lat. 12° 43′·0 N, Long. 89° 44′·1 W } 1079 fms. gn. m.
2.30	Finished transferring the 4 N.M. of Light Intermediate Cable from main tank to starboard lower-after pocket, leaving the Light Deep Sea in main tank clear for use.
4.0	Light SE by S airs. Fine and clear. Very warm and sultry. Calm sea.

Hour.	THURSDAY, APRIL 27TH, 1893—*contd.*
P.M.	
5.40	Sounding 99 S { Lat. 12° 42′·8 N, Long. 90° 8′·5 W } 1470 fms. gn. m.
6.0	Temp. in cable tanks, bottom of cone: fore tank 77½° F., main tank 77° F., after tanks 77½° F.
6.42	Position by stars { Lat. 12° 45′·8 N, Long. 90° 14′·1 W } Current observed since noon = S 86° W, 6·7 N.M. = 1·0 KTS.
8.0	Calm. Fine, bright, and clear overhead. Hazy horizon. Calm sea. Bar. 30·010 (82° F.). Temp. 82°·2 F. dry, 77°·7 F. wet. Sea surface 84° F.
9.5	Sounding 100 S { Lat. 12° 58′·3 N, Long. 90° 26′·6 W } 912 fms. gn. m.
MIDNT.	Light NW breeze. Fine, clear, and moonlight.

	FRIDAY, APRIL 28TH, 1893.
A.M.	
0.25	Sounding 101 S { Lat. 12° 54′·2 N, Long. 90° 46′·3 W } 1679 fms. gn. m.
3.45	Light NW airs. Fine, bright, and clear.
3.55	Sounding 102 S { Lat. 13° 6′·6 N, Long. 91° 4′·7 W } 961 fms. gn. m.
5.31	Position by stars { Lat. 13° 10′·5 N, Long. 91° 15′·0 W } Current observed since 6·42 p.m. yesterday = N 71° E, 5·8 N.M. = 0·53 KTS.
6.0	One watch of seamen and one watch of cable hands commenced transferring coal from forehold to bunkers.
7·20	Sounding 103 S { Lat. 13° 16′·0 N, Long. 91° 26′·8 W } 905 fms. gn. m.
8.0	Light NNW airs. Fine, but cloudy. Hot and sultry. Calm sea. Bar. 30·050 (82° F.). Temp. 82°·6 F. dry, 71°·8 F. wet. Sea surface 83° F.

Hour. A.M.	FRIDAY, APRIL 28TH, 1893—*contd.*
	Temp. in cable tanks, bottom of cone: fore tank 77° F. main tank $76\frac{1}{2}$° F., after tank $77\frac{1}{2}$° F.
10.39	Sounding 104 S {Lat. 13° 25′·8 N, Long. 91° 48′·7 W} 1106 fms. gt. m.
NOON.	Calm. Fine and clear over head, but hazy round horizon. Very sultry. Calm sea. Bar. 30·000 (87° F.). Temp. 88°·8 F. dry, 78°·5 F. wet. Sea surface 88°·5 F. Position by observations {Lat. 13° 33′·6 N., Long. 91°54′·8 W. Current observed since 5·31 a.m. = N 2° E, 3·6 N.M. = 0·55 KT. Tests taken this morning on all cable in tanks with satisfactory results.
P.M. 0.16	Sounding 105 S {Lat. 13° 33′·6 N, Long. 91° 54′·8 W} 1059 fms. gn. m.
2.0	Temp. of sea at surface 88°·8 F.
2·22	Sounding 106 S {Lat. 13° 34′·6 N, Long. 92° 6′·5W} 1658 fms. stf. gn. m. & gt.
4.0	Light SW airs. Fine, clear weather. Very hot and sultry.
4.12	Sounding 107 S {Lat. 13° 37′·5 N., Long. 92° 15′·2 W.} 1779 fms. stf. gn. m. & gt.
4.30	Stopped transferring coal from forehold to bunkers, having shifted 107 tons to-day; leaving about 570 tons in forehold.
6.0	Temp. in cable tanks, botton of cone: fore tank $79\frac{1}{2}$° F, main tank 79° F, after tank $79\frac{1}{2}$° F.
7.43	Sounding 108 S {Lat. 13° 55′·6 N., Long. 92° 31′·9 W.} 517 fms. gn. m.
8.0	Light SW airs. Fine, and bright overhead, but round horizon. Calm sea, with slight SW swell. Bar. 30·000 (85° F.). Temp. 84°·2 F. dry, 78°· Sea surface 85°·5 F.

S.S. "SILVERTOWN."

Hour. P.M.	FRIDAY, APRIL 28TH, 1893—*contd.*
10.57	Sounding 109 S { Lat. 14° 3′·1 N, Long. 92° 53′·5 W } 1106 fms. gn. m.
MIDNT.	Light NW breeze. Fine, but cloudy. Calm sea. Vivid lightning to the NE.
	SATURDAY, APRIL 29TH, 1893.
A.M. 2.24	Sounding 110 S { Lat. 14° 19′·8 N, Long. 93° 11′·6 W } 436 fms. gn. m. and s.
4.0	Light W airs. Fine and bright, but cloudy.
5.50	Sounding 111 S { Lat. 14° 27′·4 N, Long. 93° 35′·1 W } 1172 fms. gn. m. Daylight. Sky clouded over, with rainy and unsettled appearauce. Vivid lightning to the E'd.
8.0	Light N'ly and variable airs. Fine, but cloudy, with heavy appearance. Vivid flashes of lightning, with sharp claps of thunder to the E'd. Hot and sultry. Calm sea. Bar. 30·020 (83° F.). Temp. 83°·2 F. dry, 77°·5 F. wet. Sea surface 84° F. Temp. in cable tanks, bottom of cone: fore tank 79½° F., main tank 79½° F., after tank 80° F.
8.45	Tests made on the spliced sections of Shore-End, Heavy Intermediate, Light Intermediate, and Light Deep Sea, pt. Sec. "10," Piece "F," in fore tank, for Salina Cruz Shore-End, and the Light Deep Sea remaining in after tank; results satisfactory.
9.0	Got the top end of Light Deep Sea cable (No. 1235, pt. of Sec. "11") from after tank, and the bottom end of Light Deep Sea, No. 1235, pt. Sec. "10," from fore tank up on deck, and commenced to open out both ends for joint, and splice together. 9 fms. = 0·009 N.M. for dry end, and 14 fms. = 0·014 N.M. for this splice cut off the Light Deep Sea in fore tank, thus reducing the length of Light Deep Sea cable, No. 1235, pt. Sec. "10," in fore tank to 106·497 N.M.

S.S. "SILVERTOWN."

HOUR.	
A.M.	SATURDAY, APRIL 29TH, 1893—*contd.*
9.18	Sounding 112 S { Lat. 14° 43′·3 N, Long. 93° 53′·9 W } 818 fms. stf. gn. m.
9.57	Commenced joint between Light Deep Sea cable in fore and after tanks.
11.0	Joint between Light Deep Sea cable in fore and after tanks finished, tested and passed. Commenced making the splice.
NOON.	Light variable breeze. Cloudy, with light showers of rain at times. Slight swell from SW. Bar. 29·990 (84° F.). Temp. 84°·2 F. dry, 78° F. wet. Sea surface 85° F. Position by observations { Lat. 14° 50′·0 N, Long. 94° 15′·0 W } Current observed since noon yesterday=N 26° W, 1·6 N.M. =0·07 KTS. Temp. in cable tanks, bottom of cone: fore tank 80° F., main tank 80° F., after tank 81° F.
P.M. 0.23	Sounding 113 S { Lat. 14° 50′·0 N, Long. 94° 15′·0 W } 1235 fms. gn. m.
0.25	Splice between the Light Deep Sea Cable in fore and after tanks completed, and bight of the cable between the two tanks triced up along deck. Total length of cable now spliced up ready for laying from Salina Cruz towards the buoyed end of cable off San Juan del Sur=604·355 N.M., viz. :—

Shore End, No. 1953B, pt. Sec. "3B" ..	=	3·936	N.M.	Piece "F" in fore tank.
Heavy Int., No. 1952, " "3" ..	=	6·990	"	
" " " 1952A, " "3A" ..	=	5·000	"	
Light " " 1951, " "2" ..	=	5·490	"	
Light Deep Sea, No. 1235, pt. Sec., "10"	=	106·497	"	
" " " " " "11"	=	74·481	"	In after tank.
" " " " Sec. "9"	=	401·961	"	
Total	=	604·355	N.M.	

4.0	Light SW by W breeze. Fine, but cloudy. Bar. 29·900. Temp. 86°·2 F. dry bulb. Sea surface 85° F.
4.6	Sounding 114 S { Lat. 15° 6′·9 N, Long. 94° 37·4 W } 619 fms. gn. m.

S.S. "SILVERTOWN."

HOUR. P.M.	SATURDAY, APRIL 29TH, 1893—*contd.*
5.0	Tests taken on all cable in tanks this afternoon by Mr. J. Rymer-Jones, in the presence of Mr. Kingsford—results satisfactory.
6.9	Sounding 115 S { Lat. 15° 16′·8 N, Long. 94° 27′·1 W } 138 fms. gt. gn. m. and s. Temp. in cable tanks, bottom of cone: fore tank 80½° F., main tank 80° F; after tank 81° F.
6.55	Position by stars { Lat. 15° 19′·5 N. Long. 94° 31′·5 W. } Current observed since noon=nil.
7.37	Sounding 116 S { Lat. 15° 22′·4 N, Long. 94° 35′·3 W } 127 fms. m. and s. h.
8.0	Light SW by W breeze. Fine, bright and clear. Slight haze round horizon. Slight WSW swell. Bar. 29·490 (84° F). Temp. 84° F. dry, 78° F. wet. Sea surface 84° F.
9.7	Sounding 117 S { Lat. 15° 29′·4 N, Long. 94° 43′·1 W } 101 fms. c. d. s.
10.43	Sounding 118 S { Lat. 15° 36′·5 N, Long. 94° 50′·9 W } 142 fms. c. s. and m.
MIDNT.	Fresh SW breeze. Fine clear weather.
	SUNDAY, APRIL 30TH, 1893.
A.M. 0.25	Sounding 119 S { Lat. 15° 43′·8 N, Long. 94° 58′·6 W } 110 fms. m. and gt.
2.35	T. Sounding 120 S { Lat. 15° 53′·2 N, Long 95° 8′·3 W } 48 fms. sft. gn. m. Bottom temp. by Therm. 90284 =61°·0 F. { Max. 82°·8 F., 9·65 mm. Min. 61°·0 F., 8·5 mm. } Surface temp.=83°·5 F.
3.34	T. Sounding 121 S { Lat. 15° 56′·9 N, Long. 95° 8′·3 W } 26 fms. sft. gn. m. Bottom temp. by Therm. 90284 =75°·2 F. { Max. 81° F., 11·4 mm. Min. 75°·2 F., 10·69 mm. } Surface temp.=83·5 F.

S.S. "SILVERTOWN."

HOUR. A.M.	SUNDAY, APRIL 30TH, 1893—*contd.*
4.0	Moderate SW wind. Fine and clear. Slight sea from SW.
4.18	Sounding 122 S { Lat. 16° 0′ 2 N / Long. 95° 8′·4 W } 20 fms. gn. m.
4.55	Position by observations { Lat. 16° 4′·2 N. / Long. 95° 8′·4 W. Current observed since 6.55 p.m. yesterday=N 14° E., 6·0 N.M.=0·64 KT. Peak Tecuani bearing N 45° W.
4.59	Sounding 123 S { Lat. 16° 4′·2 N / Long. 95° 8′·4 W } 14 fms. gn. m.
5.10	Set on for anchorage off Salina Cruz.

LAYING THE SALINA CRUZ—SAN JUAN DEL SUR SECTION.

AT SALINA CRUZ.

LANDING THE SALINA CRUZ SHORE-END.

PAYING OUT THE SALINA CRUZ SHORE-END, HEAVY AND LIGHT INTERMEDIATES.

PAYING OUT MAIN CABLE FROM SALINA CRUZ TO SAN JUAN DEL SUR.

COMPLETION OF SECTION.

S.S. "SILVERTOWN."

APRIL 30TH TO MAY 7TH, 1893.

SALINA CRUZ—SAN JUAN DEL SUR SECTION.

S.S. "SILVERTOWN."

Hour. A.M.	**Landing the Salina Cruz Shore-End.**
	SUNDAY, APRIL 30TH, 1893—*contd.*
6.10	Let go port anchor in $10\frac{1}{4}$ fms., veered chain to 45 fms. off Salina Cruz. Bearings { Punta de Coneja S 58° W. Morro de Salina S 64° W. Cerro Morro Rock S 78° E. Cable Hut N 38° E.
7.25	Doctor of the port came on board.
7.42	Doctor of the port left ship, promising Capt. Hunter to send to ship two native surf-boats as soon as possible.
7.45	Two Customs officers came on board.
8.0	Moderate SW breeze. Fine and clear. Slight sea coming into the bay. Slight surf on beach. Bar. 30·000 (83° F.). Temp. 83°·5 F. dry, 80° F. wet. Sea surface 84° F.
8.10	Lowered steam-launch. Temp. in cable tanks: bottom of cone, fore tank 80° F., main tank 80° F., after tank $80\frac{1}{2}$° F.
9.23	Capt. Hunter and Messrs. J. Rymer-Jones, Kingsford, Howard, Daley, and Cazalet, with Chief Steward, left for shore in gig.
9.35	Observed Capt. Hunter and party land safe y.
9.42	Commenced to heave up anchor, to take up position off Cable Hut to land Shore-End.
9.54	Anchor up; set on for position off Cable Hut.

HOUR. A.M.

Landing the Salina Cruz Shore-End—*contd.*

SUNDAY, APRIL 30TH, 1893—*contd.*

9.55 Messrs. E. Raymond-Barker and P. C. Willmott-Dixon, who go ashore for duty at Cable Hut during the laying of the Salina Cruz—San Juan del Sur Section, left ship for shore in surf-boat.

10.6 Let go port anchor in $9\frac{3}{4}$ fms. off Cable Hut, veered chain to 45 fms.

Position { Cerro Morro Rocks bearing N 83° E.
Punta de Conejo " S $57\frac{1}{2}$° W.
Cable Hut " N 32° E. }

Observed native labourers digging trench in front of Cable Hut for Shore-End.

10.15 Tests taken on the 604·355 N.M. of cable spliced up in fore and after tanks yesterday; results satisfactory. Sealed the end of the Shore-End (in fore tank) ready for landing.

10.20 Lowered port and starboard cutters.

10.25 Commenced coiling hauling-off lines in cutters, viz., 4 coils of 4″ and 2 coils of $4\frac{1}{2}$″ rope in starboard cutter, and 4 coils of $4\frac{1}{2}$″ and 2 coils of 5″ rope in port cutter.

10.29 Dr. Toms left in steam-launch for shore.

11.12 Shore signalled, "Don't send landing gear till I signal." Replied "O.K."

11.25 Shore signalled, "Send electrical stores here at once." Replied "O.K. Stores now loading."

11.28 Finished coiling hauling lines in starboard and port cutters.

11.35 Commenced loading surf-boat with electrical stores for Cable Hut.

11.58 Mr. J. F. Lumsden, with Skinner (Jointer), and Brackett (Assistant Steward), left in surf-boat for landing place with food for shore party and electrical stores.

NOON. Fresh SSW breeze. Fine and clear. Moderate sea rolling into anchorage, with considerable surf on the beach. Wind has freshened considerably during the morning.

Bar. 29·950 (83° F.). Temp. 85°·1 F. dry, 79°·2 F. wet. Sea surface 83°·8 F.

HOUR. P.M.	**Landing the Salina Cruz Shore-End**—*contd.*
	SUNDAY, APRIL 30TH, 1893—*contd.*
	Temp. in cable tanks: bottom of cone, fore tank, 81° F., main tank 81° F., after tank 81½° F.
0.5	Made both cutters, containing hauling-off lines, fast to stern of ship.
0.40	Mr. J. F. Lumsden returned in surf-boat, bringing off notes from Capt. Hunter to Mr. F. W. Robinson and Capt. Morton, as follows:—" Mr. Robinson. Great difficulty in getting anything done. Am arranging for two surf-boats to go off at about noon. Make use of them as you think fit. Am going to station house, which is about 1½ miles off. Will return at two o'clock. Will signal you from Hut directing where to land gear." " Capt. Morton. If possible try and get ship nearer and opposite the Hut."
1.5	Signalled to shore, " Robinson to Hunter. Will not want shore surf-boat now."
1.6	Commenced loading surf-boat with all gear required on the beach for the landing of Shore-End, viz., 2 sand anchors, 2 spider wheels, shovels, buckets, flagstaffs, &c.
1 45	Signalled to shore, " Robinson to Hunter. Shall I send landing gear to Hut now." Shore replied, " Capt. Hunter not here. Cannot get any orders. Will ask directly he comes."
1.50	Shore signalled, " Land all gear here " (at Cable Hut).
2.0	Mr. P. Bates with Tillyer (Foreman's Mate) and 5 cable hands left in surf-boat, containing Shore-End landing gear, in tow of steam-launch for Cable Hut.
2.10	Observed steam-launch and surf-boat returning from Cable Hut.
2.15	Signalled to shore, " Is surf too heavy to land ? "
2.16	Steam-launch and surf-boat returned alongside ship, Mr. Bates reporting that he did not think it safe to attempt to land the gear in front of Cable Hut. Steam-launch then took surf-boat in tow for ordinary landing place according to Mr. Robinson's instructions.

HOUR. P.M.

Landing the Salina Cruz Shore-End—*contd.*

SUNDAY, APRIL 30TH, 1893—*contd.*

Cable hands employed getting all balloon buoys aft, ready for landing cable.

2.27 Signalled to Capt. Hunter at Cable Hut, "Surf-boat with gear has gone to landing place."

2.50 Shore signalled, "Stop everything at present. Await signals."

3.2 Steam launch and surf boat returned to ship having landed Mr. Bates, with men and Shore-End landing gear at the landing place in front of the village.

3.17 Shore signalled, "Send launch and surf-boat to landing place."

3.35 Steam-launch and surf-boat left for landing place.

4.0 Fresh SSW wind. Fine, but cloudy. Moderate sea rolling into anchorage.

4.20 Capt. Hunter with Messrs. J. Rymer-Jones, Kingsford, Howard, Daley, Doctor Toms and Cazalet, with Chief Steward, Jointer Skinner, and Brackett (Assistant Steward) returned to ship in surf-boat in tow of steam-launch.

NOTE.—On arrival on shore this morning Capt. Hunter arranged for two native surf-boats to go off to ship for stores, &c., but the boats could not go off to ship before noon. The Captain of Port was then visited, and arrangements made for a cart to take the shore party to Cable Office; which is about two miles inland from the port. After waiting some time for the said cart found it could not be obtained, so after arranging that fifty natives should be at Cable Hut in the afternoon for the landing of Shore-End, the party walked to the Cable Station. On reaching Cable Office found that Mr. W. West, the Station Manager, had gone to Cable Hut to procure labourers to open out trench for Shore-End cable, according to instructions sent by Mr. Kingsford through the Doctor of the Port first thing this morning. After sending message, No. 16, to Silvergray, London, and after Mr. J. Rymer-Jones had wired to Mr. Atherton at San Juan del Sur, to have the end of the Shore-End insulated by the 5th May, proceeded to walk to Cable Hut. On reaching Cable Hut at 2 p.m. found

HOUR. P.M.	**Landing the Salina Cruz Shore-End**—*contd.*
	SUNDAY, APRIL 30TH, 1893—*contd.*
	Mr. West there dismantling the C. and S. A. Tel. Co.'s testing apparatus, and about twelve labourers opening out a trench from hut to water's edge ready for landing Shore-End. The fifty labourers as arranged for with the Capt. of Port had not arrived, and Messrs. Barker and Dixon shortly afterwards arrived at the Cable Hut reporting that they could not obtain any labour to get electrical stores brought down from the landing place to hut. It being then nearly 3 p.m., with no signs of getting any assistance in the way of native labour, and wind blowing fresh, causing a fairly heavy surf on the beach, Capt. Hunter decided to signal ship to stop further work for the day, and after arranging with Mr. West to have cable trench ready early in the morning, and the electrical stores taken down to the hut, and testing apparatus fitted up, proceeded to return to ship. Meeting Mr. Bates (who had landed with Shore-End landing gear) *en route* arranged with him to get the cable gear carried down to the hut, aud then to return to ship if possible.
5.37	Surf-boat in tow of steam-launch left for shore with a change of dry clothing, bedding and food for the hands on shore, in case they were not able to return to ship to-night.
5.40	Let go starboard anchor, veered chain to 15 fms., and veered away on port anchor to 60 fms.
6.0	Temp. in cable tanks, bottom of cone: fore tank 80½° F., main tank 81° F., after tank 81° F.
6.20	Mr. P. Bates with Tillyer (Foreman's Mate) and 5 cable hands returned from shore in steam-launch and surf-boat, having landed and taken all Shore-End landing gear down to cable hut ready for the morning. Hung boats at the boom for the night.
8.0	Moderate to fresh SSW wind. Fine, but cloudy. Moderate sea. Bar. 29·970 (83°·5 F.). Temp. 83°·6 F. dry, 79° F. wet. Sea surface 83° F.
MIDNT.	Strong SSW wind. Overcast, but fine. Moderate sea in the anchorage.

HOUR. A.M.	**Landing the Salina Cruz Shore-End**—*contd.*
	MONDAY, MAY 1ST, 1893.
4.0	Moderate SW by S wind. Overcast and cloudy. Moderate sea in bay and surf on beach.
5.30	All hands turned to and set about preparing to land Shore-End.
6.10	Commenced loading surf-boat with bedding and 3 weeks' provisions for use at Cable Hut.
6.44	Messrs. J. Rymer-Jones, P. Bates, and C. H. L. Cazalet with Tillyer (Foreman's Mate), and 5 cable hands, and Jointer Skinner left in surf-boat (containing above-named stores) in tow of steam-launch for the usual landing place, to walk from there to Cable Hut. Observed that since 4 p.m. yesterday a rough thatching of rushes on poles has been erected over Cable Hut and about 20 natives are on the beach opening out cable trench.
7.34	Observed shore party land safely from surf-boat at landing place.
8.0	Moderate SW by S breeze. Fine, but very cloudy. Moderate sea and swell coming into the anchorage, causing considerable surf on the beach. Bar. 30·000 (82° F.). Temp. 82°·7 F. dry, 76°·8 F. wet. Sea surface 84° F. Temp. in cable tanks, bottom of cone: fore tank 80½° F., main tank 81½° F., after tank 81½° F. Tests taken on the cable spliced up in fore and after tanks ready for laying south, and on all the Light Deep Sea cable in main tank—results satisfactory. Hove up starboard anchor.
8.15	Mr. Bates, with shore party having arrived at cable hut, signalled "Surf much heavier than yesterday. Boat can come within 500 feet of shore."
8.48	Mr. F. W. Robinson left in steam-launch, containing oil distributers and a line-throwing gun, with surf-boat in tow in charge of Mr. J. F. Lumsden and manned by the following cable hands: A. Day, sen., W. Bobbitt, M. Coleman, A. Armes, and W. Armes, with 70 fms. of 21-thread line and four 50-fm. lengths of 2½" rope, proceeding towards the line of breakers opposite cable hut. Surf-boat ordered to

Hour. A.M.	**Landing the Salina Cruz Shore-End**—*contd.*
	MONDAY, MAY 1st, 1893—*contd.*
	anchor near breakers and pass a line to a native who will swim through the surf out to the boat and take line ashore if possible. Should that fail it is arranged that the line-throwing gun should be tried to get line ashore.
9.0	Surf-boat anchored close to breakers and steam-launch steaming backwards and forwards to windward of surf-boat pouring oil on the water.
9.13	Observed surf-boat capsize.
9.17	Observed all hands on shore wading in the water and assisting the hands from the capsized boat to land. Apparently one man being carried up beach. Steam-launch steamed in towards the surf and appeared to pick up a man.
9.25	Observed surf-boat hauled up the beach, evidently much damaged.
9.30	Shore signalled to Mr. Robinson in steam-launch, "Lumsden and Armes missing."
9.40	Steam-launch returned to ship with Mr. F. W. Robinson and the cable hand, W. Bobbitt, who was thrown out of surf-boat and picked up by the launch. Mr. Robinson reports that all was ready in surf-boat to pass a line to a native who was swimming out from the beach towards boat when it capsized.
9.45	Signalled to shore, "Do you want doctor." Shore replied, "No."
10.15	Shore party appears to be searching along the beach for the bodies of Mr. Lumsden and cable hand W. Armes. It is supposed that when the boat capsized, it must have struck the missing men, as both were good swimmers.
10.25	Capt. Hunter and Mr. Kingsford left in gig in tow of steam-launch for the usual landing place, which is somewhat sheltered by the Morro de Salinas.
10.50	Capt. Hunter and Mr. Kingsford returned to ship, having found it unsafe to attempt to land at Cable Hut; the heavy rollers near the beach would undoubtedly smash up the boat if landing attempted. As there is every appearance to seaward of the

HOUR. A.M.	
	Landing the Salina Cruz Shore-End—*contd*
	MONDAY, MAY 1ST, 1893—*contd.*
	weather becoming much worse, decided to hoist up boats, move ship out to a safer anchorage seaward, and await better weather before making any further attempt to land Shore-End.
11.0	Signalled to shore, "Hunter to Bates. Now hoisting up boats. Ship must anchor further seawards. Ask Mr. West to arrange for native surf-boat to land ropes for us as soon as practicable."
11.20	Shore was understood to signal, "A balloon would float ashore from buoy on wreck easily." Commenced getting on board the ropes in the two cutters hanging astern since yesterday.
11.45	Signalled to shore, "Arrange to come off in native surf-boat as soon as possible."
1.55	Signalled to shore, "Hunter to West. Please offer natives a reward, say 100 dollars, if they can recover bodies of Lumsden and Armes."
NOON.	Fresh S by W wind. Fine and clear. Warm and sultry. Moderate sea and surf. Bar. 30·000 (83° F.). Temp. 85°·3 F. dry, 80° F. wet. Sea surface 82°·3 F. Temp. in cable tanks, bottom of cone: fore tank 80½° F., main tank 81½° F., after tank 81½° F. Shore signalled, "Do we land end to-day or come off now?"
P.M. 0.5	Signalled to shore, "Come off when you can get native boat." Shore replied, "Mr. West has gone to try to get boat." Heavy rollers coming into the bay at times, causing heavy surf on the beach.
0.20	Shore signalled, "In Kingsford's *xx* yesterday to Baker get crinkles." Replied to shore, at Mr. Kingsford's request, "O.K. Call crinkle sixteenth."

Hour. P.M.	**Landing the Salina Cruz Shore-End**—*contd.*
	MONDAY, MAY 1st, 1893—*contd.*
1.0	Signalled to shore, "Please see Captain of Port at once, and ask if he will kindly arrange with natives to land heaving line. Let Captain understand that he will be most handsomely paid. Suggest to him that the English speaking man who came with Port Doctor understands exactly what is wanted. Tell this man also that he will be well paid."
1.20	Shore signalled, "Bates to Hunter. Captain of Port will not allow any boat to go off. Says it is too dangerous. Absolutely refuses under any consideration."
1.45	Signalled to shore, "Kingsford to West. Please inform New York delay due to heavy surf. On no account mention accident." All rope from starboard cutter hauled on board over ship's stern, and a portion of one rope got on board from port cutter; stopped taking the rope out of the cutter.
2.20	Signalled to shore, "Will now try send line ashore by balloon buoy." Shore replied, "Bates says go to wreck, smooth water." *Note.*—This wreck lies in the breakers about ¼ N.M. W of the cable hut. As far as can be seen from the ship, everything is ready on the beach for the landing of cable, the spider wheels are placed in position, and trench dug from hut to high water mark.
3.0	Signalled to shore, "Signal Christian name of man Armes missing." Shore replied, "William."
3.35	Put into port cutter, which contains two 5″ ropes and four 4½″ ropes for hauling off lines, two coils of 2″ rope, one box containing 170 fms. and another 190 fms. of rocket line, and three balloon-buoys. The cutter hanging astern, with 30 fms. on the end of one of the 5″ ropes passed on board over ship's stern sheave.
3.36	Port cutter, in charge of Mr. Robinson, and manned by cable hands Keys, R. Day, Bendy, Ellis, and Copp, left for the line of breakers opposite Cable Hut, paying out the hauling-off ropes from cutter to ship as cutter proceeds towards

Hour. P.M.	**Landing the Salina Cruz Shore-End**—*contd.*
	MONDAY, MAY 1st, 1893—*contd.*
	beach. On arrival near the breakers cutter is to anchor, and try to float a small line with balloon buoys through the surf to the hands on shore, who will haul end of the hauling-off ropes from cutter to the beach.
3.57	Cutter half-way between ship and beach, and a little to westward of Cable Hut, stopped paying out rope, and let go a balloon-buoy, with end of small line attached, to drift ashore.
4.0	Light S by W wind, which has decreased considerably since noon. Fine, bright and clear. Moderate swell coming into the anchorage, but there appears to be less surf on the beach.
4.5	Balloon-buoy appears to be slowly drifting towards the beach, cutter paying out the small line on buoy as required.
4.13	Observed cutter let go another balloon buoy on the line.
4.20	First balloon with end of line from cutter appears to be brought up just to seaward of the surf, probably line has fouled the bottom.
4.39	Observed cutter signal to shore, "Can native swim out to balloon?" Shore replied, "Will try."
4.47	Shore signalled to cutter, "Balloon 150 yards from shore, impossible to swim." Buoy on end of line has now drifted down to the eastward and nearer Cable Hut, but the ebbing tide is evidently keeping balloon away from the beach.
4.52	Observed cutter hauling line and balloon-buoys back.
4.53	Let go starboard anchor, veered chain 15 fms., and veered away on port anchor to 60 fms.
5.0	Cutter signalled to ship, "Heave off line very easily; flag will mean stop." Replied "O.K."
5.10	Ran the 5" rope which is leading over ship's stern to cutter round paying-out drum and commenced to heave in on it, hauling cutter back to ship.

Hour. P.M.	**Landing the Salina Cruz Shore-End**—*contd.*
	MONDAY, MAY 1st, 1893—*contd.*
5.23	Cutter arrived at ship's stern; Mr. Robinson and hands came on board. Cutter made fast to stern of ship. Work suspended for the night.
5.27	Shore signalled, "Are you going to send boat for us?"
5.37	Signalled to shore party at hut, "We are now sending boats for you."
5.48	New boat manned by five seamen, and gig manned by cable hands, left for usual landing place to bring off shore party.
6.0	Temp. at cable tanks: bottom of cone, fore tank 80½° F., main tank 80½° F., after tank 80½° F.
6.15	Mr. Barker at Cable Hut signalled, "Scrymser to Kingsforh, 75. Report results soundings to standpoint and proposed slattern for saluting."
6.20	Signalled to shore, "Kingsford to West. Please wire New York surf still heavy; am on boardship and unable to land at present."
6.45	New boat and gig returned to ship with some of the shore party. Jointer Skinner and the following cable hands left on shore: J. Dulling, W. Garrod, W. Coleman, T. Ayres, A. Day (sen.), M. Coleman and A. Armes.
	Note.—Mr. P. Bates reports that on landing this morning the party proceeded to Cable Hut and got spider wheels in position, and all gear ready on beach for the landing of the Shore-End. The distance between the two spider wheels is 400 feet, and the trench opened out by labourers from Cable Hut to high water mark is 245 feet in length. The western or cable spider wheel lies at high water mark. The capsizing of the surf-boat this morning appears to have been somewhat, if not entirely, due to the boat having gone too near the line of breakers. A. Day (sen.), one of the crew of the surf-boat, was, after much difficulty, rescued from the surf and restored to consciousness. The surf-boat, which the shore party hauled up the beach beyond high water mark this afternoon, is much damaged; her stern being smashed from gunwale to kelson, and two of the air-tight cases

HOUR. P.M.

Landing the Salina Cruz Shore-End—*contd.*

MONDAY, MAY 1ST, 1893—*contd.*

washed out of the boat. Two 50-fm. lengths of 2½" manilla rope, about 55 fms. of ratline, air-tight cases, rudder and oars from the surf-boat were recovered; as also one patent anchor; but the anchor that was let go from the boat has not been found. On returning to ship this evening, much difficulty was experienced in getting away from the beach at the usual landing place, owing to the surf, which almost capsized gig in hauling out from the beach to her anchor, and it was considered advisable to leave the seven cable hands, above named, and Jointer Skinner on shore for the night, instead of again risking the gig in the surf.

Mr. J. Rymer-Jones reports that all the electrical apparatus in the Cable Hut is ready. The stores and provisions landed this morning for Cable Hut have been impounded in the Custom House, pending orders from the Customs Officials at Tehuantepec. The chief of the Customs at Salina Cruz has wired to Tehuantepec for instructions concerning these stores, and Mr. West has telegraphed to the C. and S. A. Tel. Co.'s Agents in Tehuantepec, asking them to arrange matters with the Customs Officials there to further ship's work at this port.

8.0 Moderate SW breeze. Fine and clear. Moderate sea.

Bar. 30·000 (82° F.). Temp. 81° F. dry, 79°·2 F. wet. Sea surface 82°·2 F.

9.30 Shore signalled (as far as signals could be discerned), "English Consul says want 'Silvertown' to make up papers early to-morrow, as he is returning to Tehuantepec to-morrow."

Copy of letter from Mr. F. W. Robinson to Captain Hunter, dated May 1st, 1893, 8 p.m.:—

"I beg to hand you the following details of the sad catastrophe that has happened to-day.

"About 8.30 a.m. to-day I left the ship in steam-launch with surf-boat (Mr. Lumsden in charge) in tow and steamed towards Cable Hut. I had all necessary ropes and gear in the two boats to endeavour to get a line ashore for landing the Shore-End. I had previously arranged with Mr. Lumsden that I would go in and see how the surf was, and whether it was practicable to beach the surf-boat. On

HOUR. P.M.

Landing the Salina Cruz Shore-End—*contd.*

MONDAY, MAY 1ST, 1893—*contd.*

arriving off the hut I let go the surf-boat well outside the breakers and signalled shore, 'How is surf?' Answer: 'Very heavy indeed at times; not impossible if you have line; will send man to swim off.' I replied, 'Wait'; and then told Mr. Lumsden to keep further out, the boat having drifted in. When surf-boat was again well outside, I told him (Mr. Lumsden) to anchor, and then explained to him that he was not to try and beach her, and that a native would swim out and take the ratline line ashore. I then called shore up and signalled, 'Send man now.' On looking round at surf-boat after receiving shore's answer 'O.K.,' I saw that a very heavy roller was coming in on them, breaking some 30 or 40 fms. farther out than any had done heretofore; the boat's crew were then hauling boat out as fast as possible. The roller caught the surf-boat broad on the port bow and turned her right over, throwing everyone into the water.

"I steamed as close in as possible and picked up one man (Bobbit). While we were getting him into the boat I saw another man, probably W. Armes, who was apparently insensible. I turned launch round and went for him, but he had disappeared and did not rise again.

"I saw nothing of poor Lumsden after the boat had capsized, and I fear that he must have been stunned when boat turned over.

"After steaming backwards and forwards for some time I returned to ship.

"These are, as well as I can recollect, the facts of the case as they appeared to me at the time."

TUESDAY, MAY 2ND, 1893.

A.M.

5.40 American Mail Steamer "Colon" entered the port and anchored close by.

6.0 All hands turned to.

6.20 Shore signalled, "Ripley, Santa Elena, to Kingsford. Reliable steady I.R. to-day. Do you require figs?" Replied to shore, "Kingsford to Ripley. Yes, please."

Hour. A.M.	**Landing the Salina Cruz Shore-End**—*contd.*
	TUESDAY, MAY 2ND, 1893—*contd.*
6.50	Lowered steam-launch and gig.
7.3	Mr. Kingsford, with Messrs. P. Bates and A. Fletcher, Tillyer (Foreman's Mate) and cable hand, J. Burgess, left in gig for the usual landing place.
7.30	Observed all the shore party land safely from gig.
7.40	Observed gig, in putting off from the beach, capsize and get adrift.
7.47	Observed hands on shore recover gig, and apparently hauling her up on beach.
7.58	Shore signalled, "Gig capsized, nobody hurt. Am making arrangement now for surf-boat."
8.0	Light SW wind. Fine, but slightly cloudy and hazy. Much less sea and surf than yesterday. Bar. 30·020 (82° F.). Temp. 81°·8 F. dry, 78°·5 F. wet. Sea surface 82°·4 F. Temp. in cable tanks: bottom of cone, fore tank 80½° F., main tank 80½° F., after tank 80½° F.
8.9	Capt. of the Port, and Doctor of Port, who have been visiting S.S. "Colon," came on board. Cable hands employed rigging punt with a mast and sail, as it is the intention to take punt in towards Cable Hut, and let it drift and sail through the surf to the beach opposite Hut, with end of a line from ship, should line-throwing gun fail to land line.
8.15	Observed gig leave landing place.
8.29	Gig returned to ship with cable hands, A. Day, sen., M. Coleman, and A. Armes, who were thrown out of surf-boat yesterday when it capsized. Anchor lost when gig capsized this morning. Coiled in port cutter, hanging astern, a coil of 5″ rope to make up six ropes. Commenced coiling in starboard cutter four coils of 4″ and two coils of 4½″ manilla rope for hauling-off line.
8.55	The Captain and Doctor of Port left ship.
9.15	Observed Mr. P. Bates and others of shore party arrive at Cable Hut.

HOUR. A.M.	**Landing the Salina Cruz Shore-End**—*contd.*
	TUESDAY, MAY 2ND, 1893—*contd.*
9.21	Mr. Daley left for the Mail Steamer "Colon," with a letter for the Managing Director of I. R. Co.
9.28	Shore signalled, "Kingsford to Hunter. Am going to see man *re* bullocks."
9.29	Mr. Daley returned from S.S. "Colon," which vessel left for San Francisco. Put into gig two coils of 2″ line, heaving lines, anchor, surf lines, one cork float, and a box of rocket line and put into steam-launch line-throwing gun and a box of rocket line.
10.5	Mr. F. W. Robinson, left in steam-launch with gig, and punt (rigged with a sail) in tow for the line of breakers in front of Cable Hut. Leading hand R. Keys, with cable hands, Bendy, G. Armes, Christian, Copp, and Ellis in gig.
10.6	Signalled to shore, "R. to B. Look out for line."
10.16	Shore signalled, "Will swim off for line."
10.23	Observed gig anchor near breakers in front of Cable Hut.
10.32	Finished coiling hauling-lines into starboard cutter, which with port cutter, also containing 6 ropes for hauling line, is hanging astern. Ship's stern facing Cable Hut.
10.40	Observed line-throwing gun fired from steam-launch near breakers and natives running into the surf in search of the line.
10.45	Steam-launch signalled to shore, asking if they had found line; on shore replying "No," Mr. Robinson in steam-launch signalled, "Will try again."
10.55	Observed steam-launch, steam in towards the breakers and fire line-throwing gun again.
10.59	Steam-launch signalled to shore, "Have you got line?" Shore replied, "Yes."

Hour. A.M.	**Landing the Salina Cruz Shore-End**—*contd.*
	TUESDAY, MAY 2ND, 1893—*contd.*
11.6	Steam-launch steamed alongside gig and made the 2″ line in gig fast to the small line which was fired ashore, and then signalled shore to haul away. Cable hands and natives on beach hauling on line.
11.9	Shore signalled, "No bullocks; must land cable in usual way."
11.15	Observed the end of the 2″ rope from gig hauled on to beach.
11.18	Steam-launch signalled to shore, "Do not take more line than necessary." Shore replied, "Have got enough." Observed a few natives digging cable trench down to low water mark.
11.26	Mr. F. W. Robinson in steam-launch came alongside.
11.39	Steam-launch took port cutter, containing six of the hauling off ropes, in tow towards the gig. Mr. Robinson in charge of the steam-launch.
11.56	End of 5″ rope from port cutter made fast to the 2″ rope in gig, and hands on beach hauling on 2″ rope. Cutter paying out the 5″ rope as required while men hauling ashore.
NOON.	Light SSW breeze. Fine, but cloudy and hazy. Heavy rollers coming into the anchorage at times, causing heavy surf on beach. Bar. 30·010 (83° F.). Temp. 87° F. dry, 81° F. wet. Sea surface 82°·2 F. Temp. in cable tanks, bottom of cone: fore tank 80½° F., main tank 81° F., after tank 81½° F.
P.M. 0.7	Hands on beach ceased hauling on the 2″ line from gig.
0 11	Mr. F. W. Robinson came alongside in steam-launch, and reported that as the lines are hawser-laid, the 2″ from gig and 5″ from cutter were being paid out towards beach together. Had stopped men hauling on beach, having come to end of 2″ rope in gig.

HOUR. P.M.	Landing the Salina Cruz Shore-End—*contd.*
	TUESDAY, MAY 2ND, 1893—*contd.*
0.15	Mr. Robinson left in steam-launch with $1\frac{3}{4}$ coils of 2″ line for gig. When end of 5″ rope is landed, the hands on beach will cast it clear of the 2″ line, and then take the 2″ rope along the beach to the spider wheel furthest from hut, to the E'd, ready for hauling heavy rope ashore at that spider wheel.
0.22	Observed hands on beach hauling on 2″ line again according to signals from steam-launch.
0.30	Observed end of 5″ rope from port cutter landed.
0.34	Observed hands on shore run the end of the 5″ rope round the spider wheel in front of Cable Hut and along beach towards the eastern spider wheel.
0.37	Steam-launch signalled to shore, "Is rope fast?" Shore replied, "Yes." Natives now running the 2″ line from gig along beach towards eastern spider wheel.
0.43	Observed steam-launch coming towards ship with port cutter in tow, the cutter paying out hauling-off rope.
0.50	Punt let go from gig and now drifting into the surf towards beach.
0.55	Port cutter in tow of steam-launch arrived at ship and passed bight of 4th rope inboard over stern sheave, only about $3\frac{1}{2}$ ropes in use between beach and ship.
0.56	Steam-launch took starboard cutter, containing 6 ropes for hauling-off lines, in tow towards gig and anchored clear of surf.
1.3	Observed starboard cutter anchor outside line of breakers.
1.6	Shore signalled, "Temperature of water on beach 83° F."
1.8	Punt which has drifted ashore now hauled up the beach by natives.
1.10	Observed natives and cable hands on beach now hauling on the 2″ line which has been passed from gig to starboard cutter, and made fast to the $4\frac{1}{2}$″ rope in the cutter.

Hour. P.M.	**Landing the Salina Cruz Shore-End**—*contd.*
	TUESDAY, MAY 2ND, 1893—*contd.*
1.14	Observed gig heave up anchor and start towards ship.
1.21	Observed end of $4\frac{1}{2}''$ rope from starboard cutter landed on the beach and passed round eastern spider wheel towards the western spider wheel.
1.24	Observed hauling-off ropes for endless messenger between ship and shore shackled together on beach.
1.25	Shore hoisted "all ready" signal. Observed starboard cutter heave up anchor and start in tow of steam-launch to ship, paying out hauling-off rope from beach to ship.
1.28	Shore signalled, "Lines connected up. All ready for heaving away." The two coils of rope remaining in port cutter hauled on board, and boat made fast to boom.
1.38	Steam-launch, with starboard cutter in tow, arrived at ship's stern. Bight of 5th rope from cutter hauled on board over port quarter and taken along deck to port picking-up drum, thus completing endless messenger (9 ropes in all) between ship and shore.
2.0	The coil of $4\frac{1}{2}''$ rope that remained in starboard cutter got on board, and boat made fast to boom.
2.8	Depth at stern of ship $= 9\frac{1}{2}$ fms. Temp. at bottom $=$ 76°·8 F.
2.20	Signalled to shore, "Prepare for work." Position of Cable Hut { Lat. 16° 10′·22 N. / Long. 95° 11′·33 N. }
2.30	Hauled end of Shore-End, No. 1953B, pt. Sec. "3B," top end of Piece "F," from fore tank and along leads on main deck and three times round paying-out drum to stern baulks, and set about making 60 fms. of the end of messenger fast to end of cable.
2.35	Commenced to heave in on messenger over port quarter with port picking-up drum.

HOUR. P.M.	**Landing the Salina Cruz Shore-End**—*contd.*
	TUESDAY, MAY 2ND, 1893—*contd.*
2.45	End of Shore-End cable passed over stern sheave with first balloon buoy attached.
2.47	Signalled to shore, "60 fms. rope stoppered along cable."
3.24	End of cable on first balloon buoy on beach. 0·518 N.M. of Shore-End cable paid out (from fore tank) from ship to beach.
3.30	Shore hoisted "stop" signal. Stopped heaving in on messenger and paying out cable.
3.44	Shore signalled, "Can I send spiders and surf-boat off by hauling off line?"
3.50	Signalled to shore, "Yes; bend rope on to punt."
3.51	Shore signalled, "Enough cable ashore." 0·605 N.M. of Shore-End cable paid out from ship to Cable Hut, minus 0·518 N.M. = 0·087 N.M. of Shore-End cable on beach. 35 balloon buoys outboard. Position of ship { Morro de Salinas bearing S 86° W. / ,, ,, ,, Marques bearing S 63° W. / Chipequa Point bearing S 51° W. / Cable Hut bearing N 15° E. } { Lat. 16° 9′·7 N. / Long. 95° 11′·55 W. } Distance, by chart, from ship to Cable Hut = 0·59 N.M. NOTE.—This cable lies about 3½ cables west of the Shore-End of the existing Salina Cruz—La Libertad Section, according to the line of old cable marked on the chart.
3.52	Sent steam-launch, starboard cutter, and gig away to cast balloon buoys off cable. Shore signalled, "Are you going to sea to-night?" Replied, "Yes. Sail to-night if possible. Have you ship's articles and official log?"
4.0	Light SW breeze. Fine, but cloudy. Slight swell coming into anchorage.
4.25	Shore signalled, "Too much cable; shall I cut or bury?"

HOUR. P.M.	**Landing the Salina Cruz Shore-End**—*contd.*
	TUESDAY, MAY 2ND, 1893—*contd.*
4.30	Signalled to shore, "Ask Mr. Kingsford and act?" Shore answered, "Mr. Kingsford not here." Replied, "Cut where necessary."
4.39	Shore signalled, "Now going to cut."
4.49	Steam-launch came alongside with starboard cutter, gig, and 15 balloon buoys in tow. Some 4 or 5 balloon buoys have been cut adrift from cable, and are now drifting ashore, 4 or 5 balloon buoys still on cable in the breakers.
5.20	Sent the following messages by hand flag to shore:— "Jones to Kingsford. Tell Atherton to free end of cable at noon May 6th, until further orders." "Hunter to Bates. Abandon spiders, sand anchors, and punt." "Jones to Barker. Solder short rubber lead to cable and lap joint with rubber strip."
5.21	Hoisted up starboard cutter, and the 15 balloons got on board.
5.45	Shore signalled, "Here message. During daylight man with canoe and crew waits to take men through surf to our own boats which should be waiting at buoy. Captain of Port waits Custom-house permit from Tehuantepec before giving ship's papers."
5.48	Shore signalled, "Heave away on hauling-off line."
5.55	Resumed heaving in on messenger over port quarter with port picking-up drum.
6.0	Shore signalled, "K. to H." Mr. Scrymser instructs as to subscription on his account. Shall express thanks ship." Temp. in cable tanks: main tank 80½° F., after tank 81° F.
6.5	Signalled to shore, "Send party on board at once. Bates remain behind for ship's papers." Shore replied, "Send boats to buoy then." NOTE.—The buoy mentioned by shore is placed outside the line of breakers in front of the village, and by means of a rope made fast to it, the natives haul their boats out from beach.

Hour. P.M.	**Landing the Salina Cruz Shore-End**—*contd.*
	TUESDAY, MAY 2nd, 1893—*contd.*
6.15	Shore signalled, "Send boat to meet canoe."
6.25	Observed Messrs. Kingsford and Bates and others walking along beach to the village.
6.27	Damaged surf-boat (which capsized yesterday) bottom upwards, to which is made fast 12 balloon buoys and 2 spider wheels from the beach, arrived at ship's stern, made fast to the end of the rope that formed endless messenger for the landing of Shore-End. Set about getting broken boat, balloons, and spider wheels on board.
6.30	Mr. Dixon at Cable Hut signalled, "No means of getting gear here to-night. What is to be done?" Steam-launch left for buoy off village to bring off shore party, taking a signal lamp for use at Hut, and a note to Mr. Bates to collect all balloon buoys possible, and bring them on board when he comes. As far as can be seen from ship 3 balloon buoys are still fast to cable in the surf, and 2 or 3 are on the beach, having broken adrift from the rope that came inboard at 6.27 p.m., and washed ashore.
6.35	Signalled to Cable Hut, "Don't understand; repeat." Shore answered, "Cannot get cable gear to port to-night."
6.36	Spoke shore, through cable, on mirror instrument. Hut says, "Mr. Bates left with Mr. Kingsford, leaving cable hands here with orders to have gear taken to port by labourers; but labourers refuse to undertake extra work after sunset. What is to be done with cable gear, shovels, &c.?"
6.50	Observed native boat come out from landing place to steam-launch with some of shore party.
6.55	Signalled to shore, through cable, "Capt. Hunter to Barker. Will abandon cable gear. Sail without. Use judgment selling. Must have balloons." Shore replied, "About 5 or 6 balloons here, but Tillyer has no means of conveying them."
7.1	Sent following to Cable Hut, "Ship will not start until to-morrow morning."

HOUR. P.M.

Landing the Salina Cruz Shore-End—*contd.*

TUESDAY, MAY 2ND, 1893—*contd.*

7.10 Messrs. Kingsford, Bates, and Fletcher returned from shore in steam-launch, after having narrowly escaped being capsized in native boat in leaving landing place this evening. The cable hands and Jointer Skinner are left on shore, being too late in reaching the landing place to come off in native boat. Natives refused to attempt a second journey from the beach, owing to the surf.

Mr. Bates reports that on landing this morning he accompanied Mr. Kingsford to the Captain of the Port's office, and tried every possible means to get a native boat to be placed at ship's disposal to-day. $300 offered for the use of the boat, but all to no purpose. The ship's articles and official log, giving particulars of the death of Mr. J. F. Lumsden and cable hand W. Armes yesterday, were left with Captain of the Port for the English Consul; these papers were returned to Mr. Bates this evening unopened.

On the Shore-End being landed this afternoon there were found to be 13 fms.=0·013 N.M. more cable on the beach than required to reach Cable Hut; this length was cut off, and end of cable from ship run into the Cable Hut. The cable has been well buried in a trench of about 4 feet in depth to low water mark by labourers, and arrangements have been made with Mr. West to have a few natives for a day or two standing by to bury the cable should it become exposed at any part on the beach.

0·605 N.M. minus 0·013 N.M.=0·592 N.M. of Shore-End cable laid from ship to Cable Hut to-day.

0·087 N.M. minus 0·013 N.M.=0·074 N.M. of Shore-End cable now on beach between water's edge and Cable Hut.

NOTE.—Bill of health for ship could not be obtained from the Captain of the Port this evening, as he is awaiting instructions from the Chief of the Customs at Tehuantepec.

7.30 The balloon buoys and spider wheels that came off on end of messenger got on board, and damaged surf-boat hoisted up on to upper deck. Boat much damaged, but apparently not beyond repair.

Gig hoisted up.

7.40 Another turn of Shore-End cable put round paying-out drum.

Spoke shore on mirror, and sent the following message:—

HOUR. P.M.	
	Landing the Salina Cruz Shore-End—*contd.*
	TUESDAY, MAY 2ND, 1893—*contd.*
	"Capt. Hunter to Barker. We remain here till to-morrow noon certain. Early morning will send instructions. Try if possible to get balloons and gear to port.
8.0	Light SSW wind. Fine and clear. Slight swell in the anchorage. Bar. 29·995 (83° F.). Temp. 83°·5 F. dry, 79°·9 F. wet. Sea surface 80°·1 F
8.33	Sent following message to Cable Hut:—"Hunter to Barker. Please ask Mr. West try and arrange through Captain of Port to send cable hands off in shore boat when steam-launch goes to landing place at 10 o'clock. If possible get gear off same time." Mr. Kingsford this evening handed to Capt. Hunter a copy of the following telegram:—"President Scrymser, Central and South American Telegraph Company, New York. May 2nd. Sympathies. Subscribe twenty pounds Armes family my account." (See message from shore at 6.0 p.m.)
MIDNT.	Light SSW breeze. Fine and clear. Ship lying quietly to anchor and cable.
	Paying out the Salina Cruz Shore-End.
	WEDNESDAY, MAY 3RD, 1893.
A.M. 4.0	Light NW breeze. Fine, but cloudy.
7.0	Spoke Cable Hut on mirror.
7.20	Observed C.P.G.H. flying at the Captain of the Port's office, which means, "Clearance of customs not yet arrived. Hourly expect." Replied by hoisting signal for "Thanks."
7.35	Sent the following message through cable to Hut:—"To Cummings, Mexico. Ship 3rd, 'Silvertown,' is ready to leave, but Captain of Port says Aduana must give solvencia. Can't do anything in Salina Cruz, and telegram sent to Tehuantepec yesterday, p.m., has so far had no effect. Please ask

Hour. A.M.	**Paying out the Salina Cruz Shore-End**—*contd.*
	WEDNESDAY, MAY 3RD, 1893—*contd.*
	authority wire direct to S.X. without delay. Kingsford." M.M. to West S.C. "Please note and send papers on board as soon as possible."
7.51	Signalled to Captain of Port, "Can you send hands off?" Shore answered, "Yes, immediately."
8.0	Light NW breeze. Fine, but overcast and hazy. Calm sea with slight swell. Moderate surf. Bar. 30·000 (81° F.). Temp. 80°·8 F., dry, 77°·5 F. wet. Sea surface 82°·5 F. Temp. in cable tanks: bottom of cone, main tank 80° F., after tank 81° F. Draught of ship { Forward 24′ 0″. Aft 26′ 0″.
8.3	Shore signalled through cable, "Mr. West absent from office. Tillyer here, and must get gear, &c., off to port, no men available except trench labourers, who will take things to port, and finish refilling trench later on."
8.35	Observed Tillyer and cable hands with natives on way towards village.
8.57	Cutter in charge of Mr. Wylie, with 6 cable hands, left to place a 70 class buoy, with cage on flagstaff, about 20 fms. astern of ship, to mark line of Shore-End cable, and to take a temperature sounding midway between ship and breakers.
9.0	Observed a native boat coming out from the landing place.
9.5	Lowered gig and sent it away to meet shore boat.
9.13	Native boat came alongside with 2 coils of 2″ line, 5 balloon buoys, 5 shovels, luncheon basket, iron snatch block, 4 buckets, rocket line, and a few other small things from the beach.
9.15	Cutter returned, having put the 70 class buoy down in 9 fms., moored with 10 fms. $\frac{1}{2}$″ chain, and 1 mushroom = 2 cwt. 0 qrs. 5 lbs. Temperature taken by cutter in $8\frac{3}{4}$ fms. = 81° F.
9.23	Native boat and gig left for cable landing place.

Paying out the Salina Cruz Shore-End—*contd.*

WEDNESDAY, MAY 3RD, 1893—*contd.*

HOUR. A.M.	
9.35	Commenced to heave up starboard anchor.
9.38	Put engine of paying-out machine in gear, and paid out about 10 fms. of cable as ship moved up to anchor.
9.48	Starboard anchor up. Commenced to heave short on port anchor.
10.3	Paid out a little more cable.
10.4	Put engine of paying-out machine out of gear. Weight on brake levers=1125 lbs. (16 weights).
10.5	Stopped heaving in on port anchor, 30 fms. chain now outboard.
10.12	Gig and native boat came alongside with cable hands and Mr. Wehner, British Vice-Consul, and doctor of Tehuantepec, with ship's papers. Two more balloon buoys brought on board by Tillyer, who reports that two sand anchors, two short pieces of chain, about 400 fms. of rope, and one or two things of small importance left on shore. One balloon buoy missing. NOTE.—All the balloon buoys are clear of the cable between ship and shore.
10.20	Native boat left for shore to bring on board the rope which natives are carrying from the Cable Hut to landing place.
10.21	Hoisted up gig, and prepared for sea.
11.10	As there are no signs of native boat coming from shore, lowered gig.
11.16	Gig left for shore with Mr. Wehner (British Vice-Consul) and the doctor of Tehuantepec.
11.27	Native boat now coming out from landing place to meet gig.
11.37	Gig returned with a quantity of rope from shore.
11.44	Gig and rope hoisted up.
11.50	Moving ship's engines. Strain on cable=60 cwt. Lifted brakes right up.

HOUR. A.M.

Paying out the Salina Cruz Shore-End—*contd.*

WEDNESDAY, MAY 3RD, 1893—*contd.*

11.53 Cable running out very slowly to strain.

11.56 Commenced to heave up anchor. Strain on cable at times =80 cwt.

NOON. Moderate NNE wind. Fine, but cloudy and hazy. Slight SSW swell.

Bar. 29·950 (92° F.). Temp. 92°·5 F. dry, 77°·5 F. wet. Sea surface 84° F.

Temp. in cable tanks: bottom of cone, main tank 81° F., after tank 81½° F.

P.M.

0.3 Anchor aweigh. Set on slow ahead. Strain on cable= 60 cwt. Cable running out slowly.

0.5 Anchor up. Cable running out slowly to a strain of about 35 cwt.

0.9 SHIP ON COURSE S 5° E.

0·743 N.M. of Shore-End, No. 1953B, pt. Sec. "3B," paid out from fore tank, minus 0·013 N.M. (cut off on beach)=0·730 N.M. of Shore-End cable laid from Salina Cruz Hut.

0·730 N.M. minus 0·592 N.M.=0·138 N.M. of cable paid out from anchorage.

CABLE, BY INDICATOR, PAID OUT ON CURVE=0·138 N.M.

DISTANCE BY CHART OVERGROUND=0·138 N.M.

SLACK=Nil.

Stopped ship's engines and let go mark buoy 60 (cage on flagstaff).

Depth=11 fms.

Moorings of buoy:—

1 10-fm. length of $\frac{5}{8}''$ chain. 1 5 " " " 1 mushroom=3 cwt. 0 qrs. 7 lbs.	Moorings riveted together, and on to buoy with $\frac{7}{8}''$ shackles.

Cerro Morro bearing N 76° E.

Morro de Salinas bearing W.

Position { Lat. 16° 9′·57 N. Long. 95° 11′·58 W.

0.11 Set on easy ahead.

Hour. P.M.	
	Paying out the Salina Cruz Shore-End—*contd.*
	WEDNESDAY, MAY 3RD, 1893—*contd.*
0.16	Drum=18½ revs. per min.=3·2 KTS. Ship's engines=25 revs. per minute.
0.18	Increased ship's engines to 30 revs. per minute.
0.30	Drum=29 revs. per min.=5·1 KTS. Ship's engines=31 revs. per min. Patent log=1·4 N.M. Weight on brake levers=1125 lbs.
	Paying out Salina Cruz Heavy Intermediate.
0.50	SPLICE BETWEEN SHORE-END, NO. 1953B, PT. SEC. "3B," AND HEAVY INTERMEDIATE, NO. 1952, PT. SEC. "3," FROM FORE TANK PASSED OFF DRUM. Shore-End, No. 1953B, pt. sec. "3B," paid out from fore tank by Factory measurement .. =3·936 N.M. Cut off on beach .. .. .. =0·013 N.M. =3·923 N.M Paid out by Drum measurement =3·958 N.M. Cut off on beach .. .. .. =0·013 N.M. =3·945 N.M. Difference .. .. =0·022 N.M. Patent log=3·2 N.M. Depth=16 fms. Morro de Salinas bearing N 26° W. Cerro Morro " N 24° E. Morro Marques " N 67° W. Position of splice { Lat. 16° 6'·45 N. Long. 95° 11'·38 W. Strain on dynamometer fell from 22 cwt. to 13 cwt. on splice passing outboard.
1.0	0·932 N.M. of Heavy Intermediate, No. 1952, pt. Sec. "3," paid out from fore tank. Patent log=4·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=4·855 N.M. Depth=19 fms. Drum=32 revs. per min.=5·6 KTS. Ship's engines=31 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=13 cwt. Strophometer=29 revs.

Hour. P.M.	
	Paying out Salina Cruz Heavy Intermediate—*contd.*
	WEDNESDAY, MAY 3RD, 1893—*contd.*
1.30	3·757 N.M. of Heavy Intermediate, No. 1952, pt. Sec. "3," paid out from fore tank. Patent log=6·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=7·680 N.M. Depth=20 fms. Drum=31½ revs. per min.=5·5 KTS. Ship's engines=31 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=16 cwt. Strophometer=29 revs.
2.0	6·776 N.M. of Heavy Intermediate, No. 1952, pt. Sec. "3," paid out from fore tank. Patent log=9·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=10·699 N.M. Depth=30 fms. Drum=34 revs. per min.=5·98 KTS. Ship's engines=34 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=13 cwt. Strophometer=31 revs.
2.5	Mark shewing where Heavy Intermediate, No. 1952, pt. Sec. "3," ends, and where Heavy Intermediate, No. 1952A, pt. Sec. "3A," commences (there being no splice between these types) cannot be found; although every search has been made in fore tank for it, and according to the indicator on paying-out drum now, this mark (if on cable) must have passed outboard unobserved.
2.30	9·787 N.M. of Heavy Intermediate, No. 1952 and 1952A, pt. Secs. "3" and "3A," paid out from fore tank. Patent log=12·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=13·710 N.M. Depth=45 fms. Drum=34 revs. per min.=5·98 KTS. Ship's engines=31½ revs. per min. Weight on brake levers=1125 lbs. Dynamometer=13 cwt. Strophometer=30 revs.
	Paying out Salina Cruz Light Intermediate.
2.54	SPLICE between Heavy Intermediate, No. 1952A, pt. Sec. "3A," and Light Intermediate, No. 1952, pt. Sec. "2," from fore tank, passed off drum. 11·914 N.M. of Heavy Intermediate cable, Nos. 1952 and 1952A, pt. Secs. "3" and "3A," paid out from fore tank. Patent log=14·9 N.M.

S.S. "SILVERTOWN."

HOUR. P.M.	**Paying out Salina Cruz Light Intermediate**—*contd.*

WEDNESDAY, MAY 3RD, 1893—*contd.*

Length by Factory measurement of pt. Sec. "3" = 6·990 N.M. and pt. Sec. "3A" = 5·00 N.M. .. .. = 11·990 N.M.
Length by Drum measurement of pt. Secs. "3" and "3A" .. .. = 11·914 „

Difference .. .. = 0·076 N.M.

Depth = 80 fms.

TOTAL CABLE LAID, by Factory measurement, FROM SALINA CRUZ HUT = 15·913 N.M.

Position of splice { Chipequa Point (High Land) bearing N 57° W; Mount Conejo bearing N 38° W; „ Tecuani „ N 20° W } Lat. 15° 54′·75 N. Long. 95° 10′·88 W.

Dynamometer fell to 8 cwt. after splice had passed out.

3.0 0·742 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from fore tank. Patent log = 15·5 N.M.

TOTAL CABLE LAID FROM SALINA CRUZ HUT = 16·655 N.M.

Depth = 85 fms.

Drum = 32 revs. per min. = 5·6 KTS. Ship's engines = 31 revs. per min. Weight on brake levers = 1125 lbs. Dynamometer = 8 cwt. Strophometer = 29 revs.

3.30 3·816 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from fore tank. Patent log = 18·3 N.M.

TOTAL CABLE LAID FROM SALINA CRUZ HUT = 19·729 N.M.

Depth = 120 fms.

Drum = 34 revs. per min. = 5·98 KTS. Ship's engines = 30 revs. per min. Weight on brake levers = 1125 lbs. Dynamometer = 7½ cwt. Strophometer = 36 revs.

Reduced ship's engines to 25 revs. per minute.

Paying out from Salina Cruz to Buoy on San Juan del Sur End.

Paying out Light Deep Sea.

3.43 SPLICE between Light Intermediate, No. 1951, pt. Sec. "2," and Light Deep Sea, No. 1235, pt. Sec. "10," from fore tank, passed off drum.

HOUR. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*

WEDNESDAY, MAY 3RD, 1893—*contd.*

5·599 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from fore tank.

Length by Factory measurement of this piece of Light Intermediate paid out.. = 5·490 N.M.

Length by Drum measurement of this piece of Light Intermediate paid out.. = 5·599 „

Difference .. .. =0·109 N.M.

TOTAL CABLE LAID, BY FACTORY MEASUREMENT, FROM SALINA CRUZ HUT=21·403 N.M.

Patent log=19·4 N.M.

Depth=150 fms.

Position of splice { Chipequa Point (High Land) bearing N 47° W; Cerro Morro bearing N 1° E } Lat. 15° 49′·4 N. Long. 95° 10′·6 W.

3.45 Increased ship's engines to 30 revs. per min.

4.0 Fresh NNE wind. Fine and bright, but cloudy. Slight following sea and swell.

Bar. 29·860 (88° F.). Temp. 89°·2 F. dry, 80° F. wet. Sea surface 84°·8 F.

1·697 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=20·9 N.M.

TOTAL CABLE LAID FROM SALINA CRUZ HUT=23·100 N.M.

Depth=150 fms.

Drum=39½ revs. per min.=6·9 KTS. Ship's engines=30 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=7½ cwt. Strophometer=29 revs.

4.20 Decreased ship's engines to 25 revs. per min.

Ran a quantity of the water out of brake tank beneath paying-out machine, to about one-third from the bottom.

4.30 4·543 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=23·5 N.M.

TOTAL CABLE LAID FROM SALINA CRUZ HUT=25·946 N.M.

Depth=150 fms.

Drum=32 revs. per min.=5·6 KTS. Ship's engines=25½ revs. per min. Weight on brake levers=1125 lbs. Dynamometer=7½ cwt. Strophometer=29 revs.

Hour. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	WEDNESDAY, MAY 3RD, 1893—*contd.*
4.50	6·253 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=25·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=27·656 N.M. Depth=200 fms. CHANGED COURSE TO S 55° E. CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, S 5° E (MADE GOOD S $2\frac{1}{2}$° E)=26·926 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 5° E (MADE GOOD S $2\frac{1}{2}$° E)=26·292 N.M. SLACK=2·4%. Position { Mount Shadani bearing N 10° W. Lat. 15° 43′·25 N. Long. 95° 10′·40 W.
4.56	Increased ship's engines to 28 revs. per min.
4.58	Increased ship's engines to 30 revs. per min.
5.0	Increased ship's engines to 33 revs. per min. 6·803 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=25·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=28·206 N.M. Depth=200 fms. Drum=$25\frac{1}{2}$ revs. per min.=4·5 KTS. Ship's engines=28 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=nil to $5\frac{3}{4}$ cwt. Strophometer=23 revs.
5.20	Increased ship's engines to 36 revs. per min.
5.30	9·195 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=28·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=30·598 N.M. Depth=200 fms. Drum=27 revs. per min.=4·75 KTS. Ship's engines=37 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=$5\frac{3}{4}$ cwt. Strophometer=28 revs.
6.0	11·886 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=30·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=33·289 N.M. Depth=200 fms.

HOUR P.M.	
	Paying out from Salina Cruz to Buoy on San Juan del Sur End—*contd.*
	WEDNESDAY, MAY 3RD, 1893—*contd.*
	Drum=30½ revs. per min.=5·3 KTS. Ship's engines=37 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=6¼ cwt. Strophometer=30 revs.
	Temp. in cable tanks: bottom of cone, main tank 80½° F., after tank 81° F.
6.30	14·559 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=33·8 N.M.
	TOTAL CABLE LAID FROM SALINA CRUZ HUT=35·962 N.M.
	Depth=190 fms.
	Drum=30 revs. per min.=5·28 KTS. Ship's engines=36 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5½ cwt. Strophometer=25 to 29 revs.
7.0	17·276 N.M of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=37·0 N.M.
	TOTAL CABLE LAID FROM SALINA CRUZ HUT=38·679 N.M.
	Depth=180 fms.
	Drum=30½ revs. per min.=5·3 KTS. Ship's engines=36 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5¾ cwt. (mean). Strophometer=29 revs.
	Position by stars { Lat. 15° 35′·5 N. Long. 95° 1′·9 W.
	Current observed since 4.50 p.m.=S 54° W, 2·2 N.M.=1·0 KT.
7.30	20·024 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=40·1 N.M.
	TOTAL CABLE LAID FROM SALINA CRUZ HUT=41·427 N.M.
	Depth=150 fms.
	Drum=31 revs. per min.=5·4 KTS. Ship's engines=36 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=0 to 5½ cwt. Strophometer=29 revs.
8.0	Strong NNE wind. Fine, but cloudy and hazy. Moderate NE sea on port bow.
	Bar. 29·930 (86° F.). Temp. 86°·5 F. dry, 80° F. wet. Sea surface 84°·5 F.
	22·884 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=43·1 N.M.
	TOTAL CABLE LAID FROM SALINA CRUZ HUT=44·287 N.M.
	Depth=140 fms.

Hour. P.M.	Paying out from Salina Cruz to Buoy on San Juan del Sur End—*contd.*
	WEDNESDAY, MAY 3RD, 1893—*contd.*
	Drum=32½ revs. per min.=5·7 KTS. Ship's engines=36 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=0 to 5½ cwt. Strophometer=30 revs.
8.30	25·818 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=44·9 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=47·221 N.M. Depth=140 fms. Drum = 33 revs. per min.=5·8 KTS. Ship's engines=36 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting only). Strophometer=36 revs. NOTE.—Brakes right up since noon.
9.0	28·776 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=47·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=50·179 N.M. Depth=140 fms. Drum=33½ revs. per min.=5·9 KTS. Ship's engines=36½ revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5 cwt. Strophometer=35 revs.
9.30	31·718 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=50·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=53·121 N.M. Depth=125 fms. Drum=33½ revs. per min.=5·9 KTS. Ship's engines=36 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5½ cwt. Strophometer=30 revs.
10.0	34·708 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=53·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=56·111 N.M. Depth=120 fms. Drum=34 revs. per min.=6·0 KTS. Ship's engines=36 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5 to 6 cwt. Strophometer=30 revs. Ship rolling slightly to a rough sea.
10.30	37·733 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=56·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=59·136 N.M. Depth=115 fms.

Hour. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	WEDNESDAY, MAY 3RD, 1893—*contd.*
	Drum=34½ revs. per min.=6·07 KTS. Ship's engines=36½ revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5 to 6 cwt. Strophometer=30 to 33 revs.
10.48	Decreased ship's engines to 34 revs. per min.
11.0	40·846 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=59·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=62·249 N.M. Depth=115 fms. Drum=35 revs. per min.=6·16 KTS. Ship's engines=34 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=0 to 6 cwt. Strophometer=32 revs.
11.30	43·809 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=63·0 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=65·212 N.M. Depth=120 fms. Drum=33½ revs. per min.=5·89 KTS. Ship's engines=34 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=0 to 6 cwt. Strophometer=31 revs.
MIDNT.	Fresh NNW breeze. Fine, but cloudy. Moderate confused sea. Bar. 29·960 (85° F.). Temp. 85° F. dry, 79°·8 F. wet. Sea surface 84°·3 F. 46·837 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=66·0 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=68·240 N.M. Depth=125 fms. Drum=34 revs. per min.=6·0 KTS. Ship's engines=34 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=28 to 32 revs. Decreased ship's engines to 30 revs. per min.
	THURSDAY, MAY 4TH, 1893.
A.M.	
0.30	49·635 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=69·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=71·038 N.M. Depth=128 fms.

HOUR. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	THURSDAY, MAY 4TH, 1893—*contd.*
	Drum=31½ revs. per min.=5·5 KTS. Ship's engines=30 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=27 revs.
1.0	52·178 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=71·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=73·581 N.M. Depth=130 fms. Drum=29 revs. per min.=5·1 KTS. Ship's engines=29 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=25 to 28 revs.
1.30	54·764 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=73·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=76·167 N.M. Depth=130 fms. Drum=29 revs. per min.=5·1 KTS. Ship's engines=28½ revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=24 to 28 revs.
2.0	57·333 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=76·0 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=78·736 N.M. Depth=139 fms. Drum=29 revs. per min.=5·1 KTS. Ship's engines=29 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=25 to 28 revs.
2.30	59·911 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=78·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=81·314 N.M. Depth=140 fms. Drum=29 revs. per min.=5·1 KTS. Ship's engines=29½ revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=25 to 28 revs.
3.0	62·550 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=81·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=83·953 N.M. Depth=140 fms. Drum=30 revs. per min.=5·28 KTS. Ship's engines=30 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=26 to 29 revs.

HOUR. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	THURSDAY, MAY 4TH, 1893—*contd.*
3.30	65·231 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=83·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=86·634 N.M. Depth=140 fms. Drum=30 revs. per min.=5·28 KTS. Ship's engines=30 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=27 to 29 revs.
4.0	Fresh NNW breeze. Fine, but cloudy. Occasional lightning to the N'd and W'd. Moderate, confused sea from the NW. Bar. 29·900 (83° F.). Temp. 83°·0 F. dry, 78°·2 F. wet. Sea surface=84°·5 F. 68·012 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=86·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=89·415 N.M. Depth=138 fms. Drum=31½ revs. per min.=5·5 KTS. Ship's engines=30 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=27 to 30 revs.
4.30	70·787 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=88·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=92·190 N.M. Depth=138 fms. Drum=31½ revs. per min.=5·5 KTS. Ship's engines=30 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=0 to 5½ cwt. Strophometer=29 revs.
5.0	73·474 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=91·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=94·877 N.M. Depth=140 fms. Drum=30½ revs. per min.=5·3 KTS. Ship's engines=30 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=0 to 5½ cwt. Strophometer=29 revs.
5.30	76·077 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=93·9 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=97·480 N.M. Depth=140 fms.

HOUR. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	THURSDAY, MAY 4TH, 1893—*contd.*
	Drum=29½ revs. per min.=5·2 KTS. Ship's engines=30 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=0 to 5½ cwt. Strophometer=28 revs.
6.0	78·640 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=96·4 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=100·043 N.M. Depth=170 fms. Drum=29 revs. per min.=5·1 KTS. Ship's engines=29 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=0 to 5½ cwt. Strophometer=27 revs.
6.10	Increased ship's engines to 33 revs. per min.
6.30	81·256 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=98·9 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=102·659 N.M. Depth=180 fms. Drum=29½ revs. per min.=5·2 KTS. Ship's engines=33 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=29 revs.
7.0	84·111 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=101·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=105·514 N.M. Depth=250 fms. Drum=32½ revs. per min.=5·7 KTS. Ship's engines=33 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=29 revs.
7.30	86·933 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10" paid out from fore tank. Patent log=104·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=108·336 N.M. Depth=320 fms. Drum=32 revs. per min.=5·6 KTS. Ship's engines=33½ revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=30 revs.
8.0	Light NE wind. Fine, but cloudy and squally. Hot and sultry. Slight sea from NW. Bar. 29·975 (84° F.). Temp. 84°·8 F. dry, 81° F. wet. Sea surface 85° F.

HOUR. A.M.

Paying out from Salina Cruz to Buoy on San Juan del Sur End—*contd.*

THURSDAY, MAY 4TH, 1893—*contd.*

Temp. in cable tanks, bottom of cone: main tank $81\frac{1}{2}$° F., after tank 82° F.

89·728 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=107·5 N.M.

TOTAL CABLE LAID FROM SALINA CRUZ HUT=111·131 N.M.

Depth=400 fms.

Drum=31 revs. per min.=5·4 KTS. Ship's engines=33 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=30 revs.

8.30 — 92·612 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=110·4 N.M.

TOTAL CABLE LAID FROM SALINA CRUZ HUT=114·015 N.M.

Depth=470 fms.

Drum=$32\frac{1}{2}$ revs. per min.=5·7 KTS. Ship's engines=$33\frac{1}{2}$ revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=30 revs.

9.0 — 95·525 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=113·3 N.M.

TOTAL CABLE LAID FROM SALINA CRUZ HUT=116·928 N.M.

Depth=500 fms.

Drum=33 revs. per min.=5·8 KTS. Ship's engines=33 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=30 revs.

9.3 — Decreased ship's engines to 28 revs. per min.

9.30 — 98·021 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=115·9 N.M.

TOTAL CABLE LAID FROM SALINA CRUZ HUT=119·424 N.M.

Depth=550 fms.

Drum=28 revs. per min.=4·9 KTS. Ship's engines=$27\frac{1}{2}$ revs. per min. Weight on brake levers=1125 lbs. Dynamometer=$5\frac{1}{4}$ cwt. Strophometer=25 revs.

10.0 — 100·354 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=117·5 N.M.

TOTAL CABLE LAID FROM SALINA CRUZ HUT=121·757 N.M.

Depth=600 fms.

S.S. "SILVERTOWN."

Hour. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	THURSDAY, MAY 4TH, 1893—*contd.*
	Drum=26½ revs. per min=4·66 KTS. Ship's engines=27 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=6½ cwt. Strophometer=25 revs. Sent the following telegram to Salina Cruz:—" Hunter to West. Please get stoppers taken off cable."
10.30	102·782 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=119·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=124·185 N.M. Depth=650 fms. Drum=27½ revs. per min.=4·84 KTS. Ship's engines=28 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5½ cwt. Strophometer=25 revs.
11.0	105·315 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank. Patent log=121·9 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=126·718 N.M. Depth=700 fms. Drum=29 revs. per min.=5·1 KTS. Ship's engines=27 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=27 revs.
11.2	About to change from fore tank to after tank. Stopped ship's engines.
11.10	Moving ship's engines as required, to ease out the bight of cable between the two tanks.
11.22	Put brakes down and held cable. Engines "full speed astern." Dynamometer=6 cwt. Patent log=122·6 N.M.
11.24	All clear in tanks. Lifted brakes right up and set on "half speed ahead."
11.28	SPLICE between Light Deep Sea, No. 1235, pt. Sec. "10," last end of Piece F, from fore tank, and Light Deep Sea, No. 1235, pt. Sec. "11," in after tank, passed off drum. 106·434 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from fore tank.

HOUR. A.M.

Paying out from Salina Cruz to Buoy on San Juan del Sur End—*contd.*

THURSDAY, MAY 4TH, 1893—*contd.*

Length by Factory measurement of Light Deep Sea, No. 1235, pt. Sec. "10," paid out .. .. = 106·497 N.M.
Length by Drum measurement of Light Deep Sea, No. 1235, pt. Sec. "10," paid out .. .. = 106·434 „

Difference .. .. = 0·063 N.M.

TOTAL CABLE LAID, BY FACTORY MEASUREMENT, FROM SALINA CRUZ HUT = 127·900 N.M.

Position of splice { Lat. 14° 42′·0 N. Long. 93° 48′·0 W.

11.35 Decreased ship's engines to 25 revs. per min.

11.45 Decreased weight on brake levers to 284 lbs.

11.50 Increased ship's engines to 30 revs. per min.

NOON. (Engineer's time.) Light SE wind. Fine and bright, but cloudy. Slight NNE sea.

Bar. 29·950 (86° F.). Temp. 86°·5 F. dry, 80° F. wet. Sea surface 86° F.

2·542 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=124·6 N.M.

TOTAL CABLE LAID FROM SALINA CRUZ HUT=130·442 N.M.

Depth=about 800 fms.

Drum=29 revs. per min.=5·1 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=26 revs.

Temp. in cable tanks: bottom of cone, fore tank 82½° F., main tank 82° F.

P.M.

0.8 (Noon by observations.) 3·236 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=125·5 N.M.

Depth=800 fms. approximately.

TOTAL CABLE LAID, BY FACTORY MEASUREMENT, FROM SALINA CRUZ HUT=131·136 N.M.

TOTAL DISTANCE, BY CHART, OVERGROUND, FROM SALINA CRUZ HUT=128·970 N.M.

SLACK=1·67%.

HOUR. P.M.	
	Paying out from Salina Cruz to Buoy on San Juan del Sur End—*contd.*
	THURSDAY, MAY 4TH, 1893—*contd.*
	Position { Lat. 14° 41′·4 N. Long. 93° 46′·1 W. Current observed since 7 p.m. yesterday = S 8° W, 5·0 N.M. = 0·3 KT. COURSE MADE GOOD SINCE 4.50 P.M. YESTERDAY = S $52\frac{1}{2}$° E. CABLE, BY INDICATOR, CORRECTED, PAID OUT SINCE 4.50 P.M. YESTERDAY = 103·480 N.M. DISTANCE, BY CHART, OVERGROUND, SINCE 4.50 P.M. YESTERDAY = 101·950 N.M. SLACK = $1\cdot5\,^{\circ}/_{\circ}$.
0.30	5·135 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log = 127·0 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT = 133·035 N.M. Depth = 800 fms. Drum = 29 revs. per min. = 5·1 KTS. Ship's engines = 31 revs. per min. Weight on brake levers = 284 lbs. Dynamometer = (nil.). Strophometer = 25 to 28 revs.
1.0	7·715 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log = 129·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT = 135·615 N.M. Depth = 800 fms. Drum = 29 revs. per min. = 5·1 KTS. Ship's engines = $30\frac{1}{2}$ revs. per min. Weight on brake levers = 284 lbs. Dynamometer = (nil). Strophometer = 26 to 28 revs.
1.30	10·316 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log = 131·9 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT = 138·216 N.M. Depth = 800 fms. Drum = 29 revs. per min. = 5·1 KTS. Ship's engines = 30 revs. per min. Weight on brake levers = 284 lbs. Dynamometer = (nil). Strophometer = 26 to 28 revs.
2.0	12·891 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log = 134·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT = 140·791 N.M. Depth = 780 fms. Drum = 29 revs. per min. = 5·1 KTS. Ship's engines = 30 revs. per min. Weight on brake levers = 284 lbs. Dynamometer = (nil). Strophometer = 26 to 28 revs.

Hour. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	THURSDAY, MAY 4th, 1893—*contd.*
2.30	15·442 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=136·8 N.M. Total Cable laid from Salina Cruz Hut=143·342 N.M. Depth=770 fms. Drum=29 revs. per min.=5·1 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=25 to 28 revs.
3.0	18·055 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=139·1 N.M. Total Cable laid from Salina Cruz Hut=145·955 N.M. Depth=770 fms. Drum=$29\frac{1}{2}$ revs. per min.=5·2 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=26 to 29 revs.
3.30	20·689 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=141·5 N.M. Total Cable laid from Salina Cruz Hut=148·589 N.M. Depth=770 fms. Drum=$29\frac{1}{2}$ revs. per min.=5·2 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=27 to 28 revs.
4.0	Moderate SE breeze. Fine and clear weather. Slight sea from NNE. Bar. 29·900 (85° F.). Temp. 85° F. dry, 80°·5 F. wet. Sea surface 86° F. 23·328 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=143·8 N.M. Total Cable laid from Salina Cruz Hut=151·228 N.M. Depth=760 fms. Drum=30 revs. per min.=5·28 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=27 to 29 revs. Note.—Brakes right up throughout the watch.
4.30	26·074 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=146·5 N.M.

HOUR. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	THURSDAY, MAY 4TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SALINA CRUZ HUT=153·974 N.M. Depth=750 fms. Drum=31 revs. per min.=5·4 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=29 revs.
5.0	29·041 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=148·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=156·941 N.M. Depth=700 fms. Drum=33½ revs. per min.=5·9 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=30 revs.
5.30	32·124 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=151·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=160·024 N.M. Depth=680 fms. Drum=35 revs. per min.=6·1 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=33 revs.
6.0	34·807 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=153·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=162·707 N.M. Depth=670 fms. Drum=30 revs. per min.=5·28 KTS. Ship's engines=29½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=28 revs. Temp. in cable tanks: bottom of cone, fore tank 82½° F., main tank 82° F.
6.30	37·498 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=155·9 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=165·398 N.M. Depth=670 fms. Drum=30½ revs. per min.=5·3 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=26 to 29 revs.

HOUR. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	THURSDAY, MAY 4TH, 1893—*contd.*
6.45	38·831 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=157·4 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=166·731 N.M. Depth=600 fms. Approximate position by stars: Lat. 14° 25′·2 N. Long. 93° 14′·3 W. Current observed since noon=N 75° E, 4·2 N.M.=0·62 KT.
7.0	40·152 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=158·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=168·052 N.M. Depth=600 fms. Drum=30 revs. per min.=5·28 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=29 revs.
7.30	42·667 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=160·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=170·567 N.M. Depth=600 fms. Drum=28½ revs. per min.=4·9 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=28 revs. Water shoaling considerably.
8.0	Moderate S by E wind. Fine and bright, but cloudy, with much lightning. Slight sea from SE'd. Bar. 29·980 (85° F.). Temp. 84°·6 F. dry, 80° F. wet. Sea surface 85°·8 F. 45·375 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=163·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=173·275 N.M. Depth=350 fms. Drum=30½ revs. per min.=5·3 KTS. Ship's engines=31 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=29 revs. NOTE.—Brakes right up throughout the watch.
8 30	48·226 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=165·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=176·126 N.M

Hour. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	THURSDAY, MAY 4TH, 1893—*contd.*
	Depth=360 fms. Drum=32½ revs. per min.=5·7 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=30 revs.
9.0	51·139 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=168·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=179·039 N.M. Depth=370 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=31 revs.
9.30	53·982 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=170·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=181·882 N.M. Depth=400 fms. Drum=32 revs. per min.=5·6 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=30 revs.
10.0	56·942 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=173·4 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=184·842 N.M. Depth=450 fms. Drum=33½ revs. per min.=5·9 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=30 revs.
10.30	59·926 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=175·9 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=187·826 N.M. Depth=600 fms. Drum=34 revs. per min.=5·98 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=31 revs.
11.0	62·901 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=178·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=190·801 N.M Depth=650 fms.

Hour. P.M.	
	Paying out from Salina Cruz to Buoy on San Juan del Sur End—*contd.*
	THURSDAY, MAY 4TH, 1893—*contd.*
	Drum=34 revs. per min.=5·98 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 to 6 cwt. Strophometer=32 revs. Dynamometer=5 cwt., but rises to 6 cwt., as cable reaches outside of flake.
11.30	66·070 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=181·0 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=193·970 N.M. Depth=650 fms. Drum=36 revs. per min.=6·33 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 to 6 cwt. Strophometer=33 revs.
MIDNT.	Light SSE airs. Fine and bright, but cloudy, with vivid lightning to the SE. Slight S'ly swell. Bar. 30·010 (84° F.). Temp. 85° F. dry, 79°·5 F. wet. Sea surface 84°·8 F. 69·404 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=183·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=197·304 N.M Depth=650 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=31 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=34 revs. NOTE.—Brakes right up throughout the watch.
	FRIDAY, MAY 5TH, 1893.
A.M.	
0.30	72·755 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=186·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=200·655 N.M. Depth=650 fms. Drum=38 revs. per min.=6·69 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=33 to 34 revs.

S.S. "SILVERTOWN."

HOUR. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	FRIDAY, MAY 5TH, 1893—*contd.*
0.45	SPLICE in Light Deep Sea between pt. Sec. "11," and Sec. "9," from after tank, passed off drum. 74·406 N.M. of Light Deep Sea, No. 1235, pt. Sec. "11," paid out from after tank. Patent log=187·5 N.M. Depth=630 fms. Length by Factory measurement of Light Deep Sea, pt. Sec. "11," paid out .. =74·481 N.M. Length by Drum measurement of Light Deep Sea, pt. Sec. "11," paid out .. =74·406 N.M. Difference .. .. = 0·075 N.M. 180·978 N.M. OF LIGHT DEEP SEA CABLE, NO. 1235, BY FACTORY MEASUREMENT LAID. TOTAL CABLE LAID FROM SALINA CRUZ HUT=202·381 N.M. Position of splice { Lat. 14° 2′·6 N. Long. 92° 48′·5 W.
1.0	1·683 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=188·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=204·064 N.M. Depth=625 fms. Drum=38 revs. per min.=6·69 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=nil. Strophometer=35 revs.
1.30	5·011 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=191·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=207·392 N.M. Depth=600 fms. Drum=37½ revs. per min.=6·6 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=nil. Strophometer=34 to 35 revs.
2.0	8·327 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=193·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=210·708 N.M. Depth=585 fms. Drum=37½ revs. per min.=6·6 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=33 to 34 revs.

HOUR. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	FRIDAY, MAY 5TH, 1893—*contd.*
2.30	11·543 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=196·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=213·924 N.M. Depth=560 fms. Drum=36 revs. per min.=6·38 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=33 revs.
3.0	14·715 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=198·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=217·096 N.M. Depth=560 fms. Drum=36 revs. per min.=6·3 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=33 revs.
3.30	17·926 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=201·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=220·307 N.M. Depth=550 fms. Drum=36 revs. per min.=6·3 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=33 revs.
4.0	Light northerly wind. Slight sea from NE. During the earlier part of the watch heavy rain squalls. About 3.0 a.m. a very heavy downfall of rain set in, accompanied by loud thunder and vivid lightning. Bar. 29·980 (81° F.). Temp. 79°·0 F. dry, 76°·4 F. wet. Sea surface 82°·4 F. 21·083 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=203·8 N.M. TOTAL CABLE LAID FRON SALINA CRUZ HUT=223·464 N.M. Depth=550 fms. Drum=35½ revs. per min.=6·24 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=33 revs. Brakes right up throughout the watch.
4.30	24·197 N.M. of Light Deep Sea, No. 1235, Sec. "9," aid out from after tank. Patent log=206·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=226·578 N.M.

HOUR. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	FRIDAY, MAY 5TH, 1893—*contd.*
	Depth=530 fms. Drum=35 revs. per min.=6·1 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=0 to 5 cwt. Strophometer=32 revs.
5.0	27·433 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=208·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=229·814 N.M. Depth=520 fms. Drum=37 revs. per min.=6·5 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=0 to 5 cwt. Strophometer=34 revs.
5.30	30·773 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=211·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=233·154 N.M. Depth=570 fms. Drum=38 revs. per min.=6·6 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=0 to 5 cwt. Strophometer=35 revs.
6.0	34·134 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=214·0 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=236·515 N.M. Depth=620 fms. Drum=38 revs. per min.=6·6 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=0 to 5 cwt. Strophometer=35 revs.
6.30	37·500 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=216·9 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=239·881 N.M. Depth=630 fms. Drum=38 revs. per min.=6·6 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=0 to 5 cwt. Strophometer=35 revs.
7.0	40·975 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=219·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=243·356 N.M. Depth=650 fms.

HOUR. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	FRIDAY, MAY 5TH, 1893—*contd.*
	Drum=39½ revs. per min.=6·9 KTS. Ship's engines=31 revs. per min. Weight on brake levers=284 lbs. Dynamometer=0 to 5 cwt. Strophometer=36 revs. NOTE.—At 4.0 a.m. drum showed current setting ship to SE'd. This current increased in force at 5.0 a.m., reaching its maximum velocity at 7.0 a.m. and then remaining constant.
7.30	44·524 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=222·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=246·905 N.M. Depth=700 fms. Drum=40 revs. per min.=7·0 KTS. Ship's engines=31 revs. per min. Weight on brake levers=284 lbs. Dynamometer=0 to 5 cwt. Strophometer=37 revs.
8.0	Calm. Fine and clear. Smooth sea. Heavy rain, with vivid lightning in earlier part of watch. Bar. 30·025 (83° F.). Temp. 83° F. dry, 77°·8 F. wet. Sea surface 85° F. 48·079 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=224·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=250·460 N.M. Depth=800 fms. Drum=40 revs. per min.=7·0 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=0 to 5 cwt. Strophometer=37 revs. NOTE.—Brakes right up throughout the watch. Temp. in cable tanks, bottom of cone: fore tank 82° F., main tank 81½° F.
8.30	51·583 N.M. of Light Deep Sea, No. 1235, Sec. '9," paid out from after tank. Patent log=227·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=253·964 N.M. Depth=800 fms. Drum=40 revs. per min.=7·0 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 to 6 cwt. Strophometer=34 revs.
9 0	54·965 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=229·9 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=257·346 N.M.

Hour A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	FRIDAY, MAY 5TH, 1893—*contd.*
	Depth=850 fms. Drum=38 revs. per min.=6·6 kts. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=34 revs.
9.30	58·272 n.m. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=232·5 n.m. Total Cable laid from Salina Cruz Hut=260·653 n.m Depth=900 fms. Drum=$37\frac{1}{2}$ revs. per min.=6·6 kts. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=34 revs.
10.0	61·562 n.m. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=235·2 n.m. Total Cable laid from Salina Cruz Hut=263·943 n.m. Depth=900 fms. Drum=37 revs. per min.=6·5 kts. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=5 cwt. Strophometer=33 revs.
10.30	64·846 n.m. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=237·9 n.m. Total Cable laid from Salina Cruz Hut=267·227 n.m. Depth=1000 fms. Drum=37 revs. per min.=6·5 kts. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=$34\frac{1}{2}$ revs.
11.0	68·118 n.m. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=240·4 n.m. Total Cable laid from Salina Cruz Hut=270·499 n.m. Depth=1100 fms. Drum=37 revs. per min.=6·5 kts. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=33 revs.
11.30	71·390 n.m. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=243·1 n.m. Total Cable laid from Salina Cruz Hut=273·771 n.m. Depth=1100 fms.

Hour.	
A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	FRIDAY, MAY 5TH, 1893—*contd.*
	Drum=37 revs. per min.=6·5 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=33 revs.
NOON.	(Engineer's time.) Calm. Fine, but slightly cloudy and hazy. Very hot and sultry. Slight S'ly swell. Bar. 30·000 (87° F.). Temp. 88°·4 F. dry, 81°·2 F. wet. Sea surface 87°·6 F. Temp. in cable tanks, bottom of cone: fore tank 82½° F., main tank 82° F. 74·551 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=245·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=276·932 N.M. Depth=1100 fms. Drum=36 revs. per min.=6·34 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=nil. Strophometer=35 revs. Brakes right up throughout the watch.
P.M.	
0.4	(Noon by observations.) 74·962 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=246·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=277·343 N.M. Depth=1100 fms. CABLE, BY INDICATOR, CORRECTED, PAID OUT SINCE OBSERVED NOON YESTERDAY=146·207 N.M. DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=138·827 N.M. SLACK=5·3%. Position { Lat. 13° 23'·1 N. / Long. 91° 47'·9 W. Current observed since 6.45 p.m. yesterday=S 67° E, 16·0 N.M.=0·9 KT.
0.30	77·919 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=248·4 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=280·300 N.M. Depth=1100 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=35 to 36 revs.

Hour. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	FRIDAY, MAY 5TH, 1893—*contd.*
	CHANGED COURSE TO S 70° E. COURSE MADE GOOD SINCE OBSERVED NOON YESTERDAY=S $55\frac{3}{4}$° E. CABLE, BY INDICATOR, CORRECTED, PAID OUT SINCE OBSERVED NOON YESTERDAY=149·164 N.M. DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=141·500 N.M. SLACK=5·4°/ₒ. Position { Lat. 13° 21′·8 N. Long. 91° 45′·5 W.
0.35	Increased ship's engines to 33 revs. per min.
1.0	81·575 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=251·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=283·956 N.M. Depth=1100 fms. Drum=41 revs. per min.=7·22 KTS. Ship's engines=34 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=38 to 39 revs.
1.30	85·261 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=254·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=287·642 N.M. Depth=1100 fms. Drum=$41\frac{1}{2}$ revs. per min.=7·27 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=nil. Strophometer=37 to 39 revs.
2.0	88·907 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=257·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=291·288 N.M. Depth=1100 fms. Drum=41 revs. per min.=7·2 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=37 to 38 revs.
2.30	92·526 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=260·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=294·907 N.M. Depth=1050 fms.

HOUR. P.M	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	FRIDAY, MAY 5TH, 1893—*contd.*
	Drum=41 revs. per min.=7·2 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=37 to 38 revs
3.0	96·184 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=263·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=298·565 N.M. Depth=1000 fms. Drum=41 revs. per min.=7·2 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=36 to 38 revs.
3.30	99·886 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=266·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=302·267 N.M. Depth=950 fms. Drum=42 revs. per min.=7·39 KTS. Ship's engines=$33\frac{1}{2}$ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=37 to 40 revs.
4.0	Calm, fine and bright, but rather cloudy and hazy. Very light southerly airs. Slight sea from SSE. Bar. 29·930 (86° F.). Temp. 85°·5 F. dry, 80°·0 F. wet. Sea surface 89° F. 103·712 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=269·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=306·093 N.M. Patent log=269·3 N.M. Depth=950 fms. Drum=43 revs. per min.=7·56 KTS. Ship's engines=$33\frac{1}{2}$ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=38 to 41 revs. Brakes right up throughout the watch.
4.30	107·631 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=272·4 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=310·012 N.M Depth=950 fms. Drum=$44\frac{1}{2}$ revs. per min.=7·8 KTS. Ship's engines=34 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=39 revs.

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Hour. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	FRIDAY, MAY 5TH, 1893—*contd.*
5.0	111·533 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=275·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=313·914 N.M. Depth=950 fms. Drum=44 revs. per min.=7·7 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=40 revs.
5.30	115·447 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=278·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=317·828 N.M. Depth=950 fms. Drum=44½ revs per min.=7·8 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=40 revs.
6.0	119·378 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=281·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=321·759 N.M. Depth=950 fms. Drum=44½ revs. per min.=7·8 KTS. Ship's engines=33½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=40 revs. Temp. in cable tanks, bottom of cone: fore tank 82° F., main tank 81° F. Decreased ship's engines to 28 revs. per min.
6.30	122·891 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=283·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=325·272 N.M. Depth=950 fms. Drum=40 revs. per min.=7·0 KTS. Ship's engines=28 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=35 revs.
6.42	124·295 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=285·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=326·676 N.M. Depth=950 fms. Approximate position by stars { Lat. 13° 10′·5 N. Long. 91° 3′·5 W. Current observed since noon=N 81° E, 7·5 N.M.=1·1 KTS.

Hour. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	FRIDAY, MAY 5TH, 1893—*contd.*
7.0	126·410 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=286·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=328·791 N.M. Depth=950 fms. Drum=40 revs. per min.=7·0 KTS. Ship's engines=29 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=37 revs.
7.30	129·989 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=288·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=332·370 N.M. Depth=950 fms. Drum=40½ revs. per min.=7·1 KTS. Ship's engines=28 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=36 revs.
8.0	Light SW breeze. Fine and bright, but cloudy, with lighning. Slight SW sea and swell. Bar. 30·000 (84°·6 F.). Temp. 84° F. dry, 80° F. wet. Sea surface 85° F. 133·390 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=291·0 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=335·771 N.M. Depth=950 fms. Drum=38½ revs. per min.=6·9 KTS. Ship's engines=28 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=37 revs. Thoughout the watch the brakes have been right up. Increased ship's engines to 33 revs. per minute.
8.30	137·157 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=293·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=339·538 N.M. Depth=950 fms. Drum=42½ revs. per min.=7·5 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=41 revs.
9.0	141·168 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=296·7 N.M.

Hour. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	FRIDAY, MAY 5TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SALINA CRUZ HUT=343·549 N.M. Depth=920 fms. Drum=45½ revs. per min.=8·0 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=41 revs.
9.30	145·164 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=299·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=347·545 N.M. Depth=920 fms. Drum=45 revs. per min.=7·9 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=40½ revs.
10.0	149·192 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=302·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=351·573 N.M. Depth=920 fms. Drum=45½ revs. per min.=8·0 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=41 revs.
10.30	153·288 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=305·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=355·669 N.M. Depth=920 fms. Drum=46½ revs. per min.=8·18 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=42 revs.
11.0	157·411 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=308·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=359·792 N.M. Depth=920 fms. Drum=46½ revs. per min.=8·18 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=41 revs.
11.30	161·519 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=311·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=363·900 N.M. Depth=920 fms.

Hour. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	FRIDAY, MAY 5TH, 1893—*contd.*
	Drum=46½ revs. per min.=8·18 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophomener=41 revs.
MIDNT.	Similar weather as at 8.0 p.m. Slight SE swell. Bar. 30·200 (84° F.). Temp. 84° F. dry, 79°·9 F. wet. Sea surface 84·8° F. 165·618 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=314·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=367·999 N.M. Depth=920 fms. Drum=46½ revs. per min.=8·18 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=41 revs. Brakes right up throughout the watch.
	SATURDAY, MAY 6TH, 1893.
A.M. 0.30	169·637 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=317·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=372·018 N.M. Depth=920 fms. Drum=45½ revs. per min.=8·0 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=40 revs.
1.0	173·509 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=320·4 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=375·890 N.M. Depth=920 fms. Drum=44 revs. per min.=7·74 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=38 to 41 revs.
1.30	177·282 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=323·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=379·663 N.M. Depth=950 fms.

Hour. A. M.	Paying out from Salina Cruz to Buoy on San Juan del Sur End—*contd.*
	SATURDAY, MAY 6TH, 1893—*contd.*
	Drum=42½ revs. per min.=7·5 KTS. Ship's engines=32½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=38 revs.
2.0	180·972 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=326·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=383·353 N.M. Depth=950 fms. Drum=42 revs. per min.=7·4 KTS. Ship's engines=32½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=38 revs.
2.30	184·595 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=328·9 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=386·976 N.M. Depth=950 fms. Drum=41 revs. per min.=7·2 KTS. Ship's engines=32½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=35 to 38 revs.
3.0	188·276 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=331·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=390·657 N.M. Depth=950 fms. Drum=41½ revs. per min.=7·28 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=37 to 39 revs.
3.30	192·009 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=334·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=394·390 N.M. Depth=950 fms. Drum=42 revs. per min.=7·4 KTS. Ship's engines=32½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=39 revs.
4.0	Light NE breeze. Fine, but overcast. Slight SE'ly sea and swell. Bar. 30·000 (82° F.). Temp. 82° F. dry, 79° F. wet. Sea surface 84°·0 F.

S.S. "SILVERTOWN."

HOUR. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	SATURDAY, MAY 6TH, 1893—*contd.*
	195·706 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=337·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=398·087 N.M. Depth=950 fms. Drum=42 revs. per min.=7·39 KTS. Ship's engines=32 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=36 to 39 revs. Brakes right up throughout the watch.
4.30	199·452 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=340·4 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=401·833 N.M. Depth=950 fms. Drum=42½ revs. per min.=7·4 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=37 revs.
5.0	203·171 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=343·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=405·552 N.M. Depth=1000 fms. Drum=42½ revs. per min.=7·4 KTS. Ship's engines=33 revs per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=38 revs.
5.30	206·823 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=346·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=409·204 N.M. Depth=1050 fms. Drum=41½ revs. per min.=7·3 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=37 revs.
6.0	210·407 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=349·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=413·788 N.M. Depth=1100 fms. Drum=40½ revs. per min.=7·1 KTS. Ship's engines=33 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=37 revs.

Hour. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	SATURDAY, MAY 6TH, 1893—*contd.*
6.10	Increased ship's engines to 36 revs. per min. NOTE.—Drum showed that the strong current to the S'd and E'd had been steadily decreasing in force since 1 a.m. Ship's engines were accordingly increased to 36 revs. per min.
6.30	214·218 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=352·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=416·599 N.M. Depth=1050 fms. Drum=43 revs. per min.=7·5 KTS. Ship's engines=36½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=41 revs.
7.0	218·131 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=355·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=420·512 N.M Depth=1050 fms. Drum=44½ revs. per min.=7·8 KTS. Ship's engines=36½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=40 revs.
7.30	222·033 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=359·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=424·414 N.M. Depth=1050 fms. Drum=44 revs. per min.=7·7 KTS. Ship's engines=36 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=40 revs.
8.0	Light NE wind. Fine, but overcast with heavy clouds. Slight S'ly swell. Bar. 30·030 (82° F.). Temp. 82°·4 F. dry, 79° F. wet. Sea surface 84° F. Temp. in cable tank, bottom of cone: fore tank 81½° F., main tank 81° F. Brakes right up throughout the watch. 225·900 N.M. of Light Deep Sea, No. 1235, Sec "9," paid out from after tank. Patent log=362·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=428·281 N.M. Depth=1050 fms.

Hour. A.M.	Paying out from Salina Cruz to Buoy on San Juan del Sur End—*contd.*
	SATURDAY, MAY 6TH, 1893—*contd.*
	Drum=44 revs. per min.=7·7 KTS. Ship's engines=36 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=40 revs.
8.30	229·828 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=365·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=432·209 N.M. Depth=1050 fms. Drum=44½ revs. per min.=7·8 KTS. Ship's engines=36 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=40 revs.
9.0	233·647 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=368·9 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=436·028 N.M. Depth=1100 fms. Drum=43 revs. per min.=7·5 KTS. Ship's engines=36 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=38 revs.
9.30	237·396 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=372·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=439·777 N.M. Depth=1050 fms. Drum=42½ revs. per min.=7·48 KTS. Ship's engines=36 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=38 revs.
10.0	241·125 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=375·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=443·506 N.M. Depth=1050 fms. Drum=42 revs. per min.=7·4 KTS. Ship's engines=36 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=38 to 41 revs.
10.25	Increased ship's engines to 38 revs. per min.
10.30	244·882 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=378·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=447·263 N.M. Depth=1050 fms.

HOUR. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	SATURDAY, MAY 6TH, 1893—*contd.*
	Drum=$42\frac{1}{2}$ revs. per min.=7·48 KTS. Ship's engines=$37\frac{1}{2}$ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=$39\frac{1}{2}$ revs.
11.0	248·846 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=382·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=451·227 N.M. Depth=1050 fms. Drum=45 revs. per min.=7·92 KTS. Ship's engines=38 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=41 revs.
11.30	252·831 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=385·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=455·212 N.M Depth=1050 fms. Drum=45 revs. per min.=7·92 KTS. Ship's engines=38 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=40 to 42 revs.
11.54	(Noon by observations.) 256·170 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=388·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=458·551 N.M Depth=1000 fms. CABLE, BY INDICATOR, PAID OUT SINCE OBSERVED NOON YESTERDAY=181·208 N.M. DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=164·223 N.M. SLACK=10·3%. Position { Lat. 12° 20′·0 N. / Long. 89° 12′·4 W. } Current observed since 6.42 p.m. yesterday=S 48° E, 17 N.M.=0·98 KT. COURSE MADE GOOD SINCE 0.30 P.M. YESTERDAY S $67\frac{1}{2}$° E. CABLE, BY INDICATOR, PAID OUT=178·251 N.M. DISTANCE, BY CHART, OVERGROUND=161·550 N.M. SLACK=10·33%.
NOON.	(Engineer's time.) Moderate ESE breeze. Fine and bright, but cloudy. Slight sea and swell from SE.

HOUR. P.M.

Paying out from Salina Cruz to Buoy on San Juan del Sur End—*contd.*

SATURDAY, MAY 6TH, 1893—*contd.*

Bar. 30·040 (82° F.). Temp. 83° F. dry, 78° F. wet. Sea surface 83°·2 F.

256·832 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=388·9 N.M.

TOTAL CABLE LAID FROM SALINA CRUZ HUT=459·213 N.M.

Depth=1000 fms.

Drum=$45\frac{1}{2}$ revs. per min.=8·01 KTS. Ship's engines=$38\frac{1}{2}$ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=40 to 41 revs.

Temp. in cable tanks: bottom of cone, fore tank 82° F., main tank $81\frac{1}{2}$° F.

Brakes up throughout the watch.

0.20 Increased ship's engines to 40 revs. per min.

0.27 As ship must make 7 KTS. over the ground to reach buoy on San Juan del Sur End by 4 p.m. to-morrow, increased ship's engines to 41 revs. per min.

0.30 260·681 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=392·2 N.M.

TOTAL CABLE LAID FROM SALINA CRUZ HUT=463·062 N.M.

Depth=1000 fms.

Drum=$43\frac{1}{2}$ revs. per min.=7·6 KTS. Ship's engines=39 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=39 to 41 revs.

1.0 264·698 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=395·8 N.M.

TOTAL CABLE LAID FROM SALINA CRUZ HUT=467·079 N.M.

Depth=1000 fms.

Drum=$45\frac{1}{2}$ revs. per min.=8·01 KTS. Ship's engines=41 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=41 to 42 revs.

1.11 Sent the following telegram to Salina Cruz:—"Kingsford to Atherton, San Juan. Expect reach San Juan Buoy about 4 p.m., May 7th, Sunday. Connect Shore Section to Morse ready for ship's call Sunday at noon. Try Morse, working

Hour. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	SATURDAY, MAY 6TH, 1893—*contd.*
	through 500 units to insure sensibility. Ship will use 12 cells, carbon to line. Keep strict watch on Morse from noon Sunday.
1.30	268·694 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=399·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=471·075 N.M. Depth=950 fms. Drum=45 revs. per min.=7·9 KTS. Ship's engines=41 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=40 to 41 revs.
2.0	272·625 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=403·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=475·006 N.M. Depth=900 fms. Drum=44½ revs. per min.=7·8 KTS. Ship's engines=41 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=40 revs. NOTE.—Pumping water out of after tank from time to time.
2.8	Increased ship's engines to 42 revs. per min.
2.30	276·680 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=406·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=479·061 N.M. Depth=850 fms. Drum=46 revs. per min.=8·09 KTS. Ship's engines=42 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=42 revs.
3.0	280·817 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=410·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=483·198 N.M. Depth=850 fms. Drum=46½ revs. per min.=8·15 KTS. Ship's engines=42 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=43 revs.

Hour. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	SATURDAY, MAY 6TH, 1893—*contd.*
3.30	285·069 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=414·4 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=487·450 N.M. Depth=850 fms. Drum=48 revs. per min.=8·44 KTS. Ship's engines=41½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=42 to 43 revs.
4.0	Light ESE wind. Fine weather, but rather cloudy. Slight sea and swell from SE. Bar. 30·000 (83° F.). Temp. 83°·2 F. dry, 76°·8 F. wet. Sea surface 81°·6. 289·245 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=418·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=491·626 N.M. Depth=850 fms. Drum=47 revs. per min.=8·27 KTS. Ship's engines=42 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=42 to 43 revs. Brakes right up throughout the watch.
4.30	293·482 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=422·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=495·863 N.M. Depth=850 fms. Drum=48 revs. per min.=8·4 KTS. Ship's engines=43 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=43 revs. Got bottom end of Light Deep Sea, No. 1235, Sec. "9," in after tank, and top end of Light Deep Sea, No. 1235, pt. Sec. "10," in main tank, up on deck, and commenced to open them out for splicing together. 19 fms.=0·019 N.M. cut off the Light Deep Sea in after tank, viz. :—14 fms. for this splice and 5 fms. for dry end, thus reducing the length of Sec. "9" to 401·942 N.M. 6 fms.=0·006 N.M. for dry end cut off Light Deep Sea in main tank, these reducing the length of L.D.S., pt. Sec. "10," in main tank, to 259·994 N.M. As pt. Sec. "10," in main tank, is spliced to Secs. "5" and "7," in same tank, there will be on completion of this splice 1695·984 N.M. of cable in circuit between Salina Cruz Hut and Testing room on board.

S.S. "SILVERTOWN."

Hour. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	SATURDAY, MAY 6TH, 1893—*contd.*
5.0	297·646 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=426·4 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=500·027 N.M. Depth=850 fms. Drum=47 revs. per min.=8·2 KTS. Ship's engines=43 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=43 revs.
5.1	Commenced joint between Light Deep Sea, No. 1235, Sec. "9," in after tank and Light Deep Sea, No. 1235, pt. Sec. "10," in main tank.
5.30	301·763 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=430·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=504·144 N.M. Depth=850 fms. Drum=$46\frac{1}{2}$ revs. per min.=8·1 KTS. Ship's engines=42 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=42 revs.
5.49	Joint between Light Deep Sea in main and after tanks completed and passed. Commenced the splice.
6.0	305·841 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=434·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=508·222 N.M. Depth=800 fms. Drum=46 revs. per min.=8·1 KTS. Ship's engines=42 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=42 revs.
6.7	Spoke Salina Cruz Hut, and resumed tests.
6.23	Increased ship's engines to 44 revs. per min.
6.30	309·975 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=438·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=512·356 N.M. Depth=850 fms.

HOUR. P.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	SATURDAY, MAY 6TH, 1893—*contd.*
	Drum=46½ revs. per min.=8·2 KTS. Ship's engines=44 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=42 to 43 revs. Position by stars { Lat. 12° 7′·0 N. Long. 88° 26′·8 W. Current observed since noon=N 70° W, 4·4 N.M.=0·7 KT.
7.0	314·209 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=442·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=516·590 N.M. Depth=850 fms. Drum=48 revs. per min.=8·4 KTS. Ship's engines=44 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=43 revs.
7.15	Finished splice between Light Deep Sea, No. 1235, Sec. "9," in after tank, and Light Deep Sea, No. 1235, pt. Sec. "10," in main tank.
7.30	318·565 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=446·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=520·946 N.M. Depth=850 fms. Drum=49½ revs. per min.=8·7 KTS. Ship's engines=44 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=46 revs.
8.0	Moderate NE wind. Fine and clear, lightning to the E'd. Slight NE sea. Bar. 30·050 (82° F.). Temp. 82°·2 F. dry, 78°·8 F. wet. Sea surface 82° F. 323·014 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=451·0 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=525·395 N.M. Depth=850 fms. Drum=50½ revs. per min.=8·9 KTS. Ship's engines=45 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(nil). Strophometer=45 revs. Brakes up throughout the watch.
8.30	327·350 N.M. of Light Deep Sea, No. 1235, Sec. "9" paid out from after tank. Patent log=455·4 N.M.

Hour. P.M.	
	Paying out from Salina Cruz to Buoy on San Juan del Sur End—*contd.*
	SATURDAY, MAY 6TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SALINA CRUZ HUT=529·731 N.M. Depth=850 fms. Drum=49 revs. per min.=8·62 KTS. Ship's engines=45 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=43½ revs.
9.0	331·571 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=459·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=533·952 N.M. Depth=850 fms. Drum=48 revs. per min.=8·45 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=42 revs.
9.30	335·817 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=463·9 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=538·198 N.M. Depth=850 fms. Drum=48 revs. per min.=8·45 KTS. Ship's engines=44 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=43 revs.
10.0	340·093 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=468·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=542·474 N.M. Depth=850 fms. Drum=48½ revs. per min.=8·54 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=43 revs. CHANGED COURSE TO S 57° E. COURSE MADE GOOD SINCE NOON=S 74° E. CABLE, BY INDICATOR, PAID OUT SINCE NOON TO-DAY=83·923 N.M. DISTANCE, BY CHART, OVERGROUND, SINCE NOON TO-DAY=74·700 N.M. SLACK=12·3%. Position { Lat. 11° 58′·9 N. Long. 87° 59′·1 W.
10.30	344·351 N.M. of Light Deep Sea, No. 1235 Sec. "9," paid out from after tank. Patent log=472·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=546·732 N.M.

Hour. P.M.	
	Paying out from Salina Cruz to Buoy on San Juan del Sur End—*contd.*
	SATURDAY, MAY 6TH, 1893—*contd.*
	Depth=800 fms. Drum=48 revs. per min.=8·45 KTS. Ship's engines=44 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=43½ revs.
11.0	348·559 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=476·9 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=550·940 N.M. Depth=750 fms. Drum=47½ revs. per min.=8·36 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=43½ revs.
11.30	352·799 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=481·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=555·180 N.M. Depth=600 fms. Drum=48 revs. per min.=8·45 KTS. Ship's engines=44 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=42 revs.
MIDNT.	Light E by S airs. Fine, but cloudy, with lightning. Slight SE swell. Bar. 30·060 (82° F.). Temp. 81°·5 F. dry, 78° F. wet. Sea surface 82° F. 356·913 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=485·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=559·294 N.M. Depth=500 fms. Drum=46½ revs. per min.=8·19 KTS. Ship's engines=44 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=42 to 44 revs.
	SUNDAY, MAY 7TH, 1893.
A.M. 0.30	361·159 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=489·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=563·540 N.M. Depth=450 fms.

HOUR. A.M.

Paying out from Salina Cruz to Buoy on San Juan del Sur End—*contd.*

SUNDAY, MAY 7TH, 1893—*contd.*

Drum=48 revs. per min.=8·45 KTS. Ship's engines=44 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=43 to 44 revs.

1.0 — 365·449 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=493·7 N.M.
TOTAL CABLE LAID FROM SALINA CRUZ HUT=567·830 N.M
Depth=430 fms.
Drum=$48\frac{1}{2}$ revs. per min.=8·54 KTS. Ship's engines=$44\frac{1}{2}$ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=43 to 45 revs.

1.30 — 369·778 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=497·9 N.M.
TOTAL CABLE LAID FROM SALINA CRUZ HUT=572·159 N.M
Depth=400 fms.
Drum=49 revs. per min.=8·62 KTS. Ship's engines=44 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=45 to 46 revs.

2.0 — 374·253 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=502·1 N.M.
TOTAL CABLE LAID FROM SALINA CRUZ HUT=576·634 N.M.
Depth=370 fms.
Drum=50 revs. per min.=8·8 KTS. Ship's engines=$44\frac{1}{2}$ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=45 revs.

2.30 — 378·726 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=506·2 N.M.
TOTAL CABLE LAID FROM SALINA CRUZ HUT=581·107 N.M.
Depth=350 fms.
Drum=50 revs. per min.=8·8 KTS. Ship's engines=44 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=45 to 46 revs.

3.0 — 383·234 N.M. of Light Deep Sea, No. 1235, Sec "9," paid out from after tank. Patent log=510·4 N.M.
TOTAL CABLE LAID FROM SALINA CRUZ HUT=585·615 N.M.
Depth=300 fms.

Hour. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	SUNDAY, MAY 7TH, 1893—*contd.*
	Drum=51 revs. per min.=8·97 KTS. Ship's engines=44¼ revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=45 to 47 revs.
3.30	387·724 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=514·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=590·105 N.M. Depth=270 fms. Drum=50 revs. per min.=8·8 KTS. Ship's engines=44 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=45 revs.
4.0	Moderate ENE breeze. Passing heavy showers of rain. Cloudy and overcast. Slight swell from the SE. Bar. 30·000 (80° F.). Temp. 76° F. dry, 74°·9 F. wet. Sea surface 80°·2 F. 391·850 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=518·6 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=594·231 N.M. Depth=250 fms. Drum=46½ revs. per min.=8·19 KTS. Ship's engines=44 revs. per min. Weight on brake levers=284 lbs. Dynamometer=(lifting). Strophometer=41 to 44 revs. Brakes right up throughout the watch.
4.11	Decreased ship's engines to 30 revs. per min. About to change from after tank to main tank.
4.27	Increased weight on brake levers to 1125 lbs.
4.30	395·455 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=522·0 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=597·836 N.M. Depth=250 fms. Drum=40½ revs. per min.=7·1 KTS. Ship's engines=31 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5½ cwt. Strophometer=29 revs.
5 0	398·153 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Patent log=524·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=600·534 N.M. Depth=250 fms

S.S. "SILVERTOWN."

HOUR. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	SUNDAY, MAY 7TH, 1893—*contd.*
	Drum=$30\frac{1}{2}$ revs. per min.=5·3 KTS. Ship's engines=31 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=$5\frac{1}{2}$ cwt. Strophometer=29 revs.
5.23	Decreased ship's engines to "dead slow"=17 or 18 revs. per min.
5.31	Stopped ship's engines.
5.37	Moving engines as required to ease out the bight of cable between the two tanks.
5.45	Dynamometer=0 to $5\frac{3}{4}$ cwt. Engines "half speed astern."
5.47	Stopped engines. Let brakes down, and held cable. Patent log=527·5 N.M.
5.50	Sounded in 70 fms. All clear in tanks. Lifted brakes, and set on "slow ahead."
5.55	SPLICE between Light Deep Sea, Factory No. 1235, Sec. "9," from after tank, and Light Deep Sea, No. 1235, pt. Sec. "10," in main tank, passed off drum. 401·358 N.M. of Light Deep Sea, No. 1235, Sec. "9," paid out from after tank. Length by Factory measurement of Light Deep Sea, Sec. "9," from after tank, paid out .. .. =401·942 N.M. Length by Drum measurement of Light Deep Sea, Sec. "9," from after tank, paid out .. .. =401·358 „ Difference .. .. = 0·584 „ 401·042 N.M.+180·978 N.M.=582·920 N.M. of Light Deep Sea cable laid by Factory measurement. TOTAL CABLE LAID FROM SALINA CRUZ HUT=604·323 N.M. Position of splice { Lat. 11° 28′·0 N. Long. 87° 6′·8 W. NOTE.—After cable tank now empty.
0·1	Increased ship's engines to 30 revs. per min. While changing tanks observed a set to N'd.

Hour. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	SUNDAY, MAY, 7TH, 1893—*contd.*
6.10	Increased ship's engines to 35 revs. per min. NOTE.—"Old man" lead that has been used whilst laying cable from after tank was shifted to main tank, so as to ease the friction caused on the quadrant there by cable whilst running out.
6.30	3·363 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=530·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=607·686 N.M. Depth=70 fms. Drum=38½ revs. per min.=6·78 KTS. Ship's engines=37 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(nil). Strophometer=35 revs.
7.0	6·532 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=533·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=610·855 N.M. Depth=70 fms. Drum=36 revs. per min.=6·3 KTS. Ship's engines=38 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(nil). Strophometer=33 revs. Increased ship's engines to 40 revs per min.
7.30	10·084 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=537·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=614·407 N.M. Depth=95 fms. Drum=40 revs. per min.=7·0 KTS. Ship's engines=41 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(nil.). Strophometer=37 revs. Increased ship's engines to 44 revs. per min.
8.0	Light ENE wind. Fine, but cloudy. Smooth sea with slight SE swell. Bar. 30·085 (81° F.). Temp. 81°·2 F. dry, 77° F. wet. Sea surface 81°·5 F. 13·953 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=541·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=618·276 N.M. Depth=95 fms.

HOUR. A.M.	**Paying out from Salina Cruz to Buoy on San Juan del Sur End**—*contd.*
	SUNDAY, MAY 7TH, 1893—*contd.*
	Drum=44 revs. per min.=7·7 KTS. Ship's engines=45 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(nil). Strophometer=41 revs. Temp. in cable tank, bottom of cone: fore tank 82½° F.
8.30	17·870 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=545·4 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=622·193 N.M. Depth=95 fms. Drum=44½ revs. per min.=7·83 KTS. Ship's engines=45 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(nil). Strophometer=39 to 42 revs.
9.0	21·699 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=549·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=626·022 N.M. Depth=95 fms. Drum=43½ revs. per min.=7·6 KTS. Ship's engines=45 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(nil). Strophometer=40 revs.
9.30	25·695 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=553·7 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=630·018 N.M. Depth=94 fms. Drum=45 revs. per min.=7·9 KTS. Ship's engines=45 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(nil). Strophometer=40 to 42½ revs.
10.0	29·705 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=557·9 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=634·028 N.M. Depth=94 fms. Drum=45½ revs. per min.=8·0 KTS. Ship's engines=44 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(nil). Strophometer=39 to 42 revs. Position { Mombacho Volcano bearing N 49° E; Centre of Range (3030 feet) bearing N 24° E; Ometepe Peak bearing N 72° E } Lat. 11° 13′·0 N. Long. 86° 40′·2 W.

S.S. "SILVERTOWN."

Hour. A.M.	
	Paying out from Salina Cruz to Buoy on San Juan del Sur End—*contd.*
	SUNDAY, MAY 7TH, 1893—*contd.*
	Current observed since 6.30 p.m. yesterday=N 25° E, 5·7 N.M.=0·36 KT.
10.30	33·757 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=562·0 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=638·080 N.M. Depth=94 fms Drum=46 revs. per min.=8·09 KTS. Ship's engines=44 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(nil). Strophometer=41 revs.
11.0	37·815 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=566·3 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=642·138 N.M. Depth=94 fms. Drum=46 revs. per min.=8·09 KTS. Ship's engines=44 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting) Strophometer=42 revs. Position { Mombacho Volcano bearing N 41° E. High land of Cape Elena bearing S 71° E. Mount Orosi bearing S 81° E.
11.30	41·835 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=570·5 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=646·158 N.M. Depth=94 fms. Drum=45½ revs. per min.=8·01 KTS. Ship's engines=45 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=41 revs.
11.40	(Noon by observations.) 43·185 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=572·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=647·508 N.M. Depth=94 fms. CABLE, BY INDICATOR, CORRECTED, PAID OUT SINCE OBSERVED NOON YESTERDAY=188·957 N.M. DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=177·450 N.M. SLACK=6·48°/ₒ.

S.S. "SILVERTOWN."

Hour. A.M.	
	Paying out from Salina Cruz to Buoy on San Juan del Sur End—*contd.*
	SUNDAY, MAY 7TH, 1893—*contd.*
	Position { Lat. 11° 5′·5 N. Long. 86° 29′·5 W. } { High Land of Cape Elena .. .. S 73° E. Mount Orosi .. S 84° E. Mombaco Volcano N 33° E. }
NOON.	(Engineer's time.) Light E'ly wind. Fine, but cloudy. Slight SE swell. Bar. 30·050 (82° F.). Temp. 84°·1 F. dry, 78°·3 F. wet. Sea surface 83°·2 F. 45·788 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=574·8 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=650·101 N.M. Depth=93 fms. Drum=45 revs. per min.=7·9 KTS. Ship's engines=44 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(nil). Strophometer=38 to 43 revs. Sighted Mark Buoy 51 H bearing S 84° E. Temp. in cable tank, bottom of cone: fore tank 82°½ F.
P.M. 0.30	Sighted Buoy 52W on San Juan del Sur End, bearing S 65° E. 49·788 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=579·1 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=654·111 N.M. Drum=45½ revs. per min.=8·04 KTS. Ship's engines=45 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(nil). Strophometer=39 to 43 revs.
0.40	Decreased ship's engines to half speed=25 revs. per min.
1.0	52·772 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=582·2 N.M. TOTAL CABLE LAID FROM SALINA CRUZ HUT=657·095 N.M. Drum=34 revs. per min.=5·98 KTS. Ship's engines=25 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(nil). Strophometer=25 revs.
	Up to Buoy on San Juan del Sur End.
1.15	Approaching Buoy 52W on San Juan del Sur End. Stopped ship's engines.

Hour. P.M.	**Up to Buoy on San Juan del Sur End**—*contd.*
	SUNDAY, MAY 7TH, 1893—*contd.*
1.18	Factory Mile Mark No. 119 in Light Deep Sea, No. 1235, pt. Sec. "10," in main tank passed off drum. 53·885 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank by paying-out drum measurement. 54·0 N.M. of pt. Sec. "10" from main tank have been expended. Therefore 54·0 N.M. minus 0·006 N.M. (cut off for dry end when splicing on to the Light Deep Sea in after tank yesterday) = 53·994 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," so far paid out from main tank by Factory measurement. Difference between the length by paying-out drum and Factory measurements = —0·109 N.M. TOTAL CABLE BY FACTORY MEASUREMENT LAID FROM SALINA CRUZ HUT = 658·317 N.M.
1.22	Moving engines as required to bring ship up to buoy.
1.28	Lowered boat and sent it away to buoy. NOTE.—No flag or flagstaff on buoy. Lanyards that held the flagstaff chafed through.
1.36	Up to buoy. Stopped ship and passed rope from port picking up drum to boat at buoy. Cable on Salina Cruz End over stern sheave, running out slowly according to strain.
1.37	Put engine of paying-out machine in gear, and commenced to pay out or pick up on the Light Deep Sea on Salina Cruz End as necessary.
1.38	Drum rope shackled on to moorings of buoy, commenced to pick up on the rope with port picking-up drum.
1.39	Slipped buoy from moorings.
1.42	Buoy "52" hoisted on board. Observed strong set of about 1 knot to the N'd.
1.48	Strain on moorings = 2 tons. Boat hoisted up.
1.49	Mushroom of moorings at bows, with a quantity of stiff green mud in it.
1.53	San Juan del Sur End (Light Intermediate cable, No. 1951, pt. Sec. "2"), buoyed on the 25th April, came inboard.
1.56	Stopped picking up on San Juan del Sur End, as enough inboard for splice, and set about bending on stoppers.

HOUR. P.M.	**Completion of Section.**
	SUNDAY, MAY 7TH, 1893—*contd.*
2.9	Cut 14 fms.=0·014 N.M., for damaged sheathing and kink, off San Juan del Sur End. 17·990 N.M. minus 0·014=17·976 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," now remaining on San Juan del Sur End.
2.10	Bent starboard quarter line and slip rope on to Salina Cruz End on stern baulks, and let ropes take the strain of the cable. Speaking San Juan del Sur on Morse.
2.15	Paid down on quarter deck 100 fms. on Salina Cruz End, ready for passing end of cable, when cut, round from stern sheave to starboard bow sheave. Waiting for testing room before cutting cable on Salina Cruz End (Light Deep Sea from main tank).
2.25	Moved ship's engines ahead to ease strain on San Juan del Sur End over port bow sheave, putting strain on Salina Cruz End over ship's stern. Commenced veering away on Salina Cruz End with slip rope and quarter line together on the 100 fms. coil of the cable on quarter deck.
2.30	Stopped veering away on Salina Cruz End, and hauled back to main tank the remainder of the 100 fms. coil on quarter deck, with paying-out drum.
2.33	Paying-out drum now holding cable on Salina Cruz End.
2.35	Cut the slip rope and quarter line on Salina Cruz End. Dynamometer=16 cwt. Commenced to pay out on Salina Cruz End as required, with paying-out machine.
2.40	Stopped paying out on Salina Cruz End (Light Deep Sea from main tank).
2.58	Tests on San Juan del Sur End satisfactory. Bent starboard quarter line and slip rope on to Salina Cruz End on stern baulks, and let ropes take the weight of the cable.
3.5	Paid down on quarter deck 100 fms. on Salina Cruz End (Light Deep Sea from main tank) and cut cable, and commenced passing Salina Cruz End from stern sheave and round starboard side of ship to starboard bow sheave.

HOUR. P.M.	
	Completion of Section—*contd.*
	SUNDAY, MAY 7TH, 1893—*contd.*
	0·606 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank on Salina Cruz End since Mile Mark, No. 119, passed out at 1.18 p.m. + 53·994 N.M.=54·600 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank.
	54·600 N.M. minus 0·024 N.M., viz.: 15 fms. surplus on the end, and 9 fms. for this final splice=54·576 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," from main tank laid on Salina Cruz End.
	TOTAL CABLE LAID BY FACTORY MEASUREMENT FROM SALINA CRUZ HUT=658·899 N.M.
	205·394 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," now left in main tank.
	CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, S 57° E (MAKE GOOD S 59½ E)=116·425 N.M.
	DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 57° E (MADE GOOD S 59½ E)=112·550 N.M.
	SLACK=3·4°/ₒ.
	Making Final Splice and Slipping Bight.
3.13	Salina Cruz End brought inboard over starboard bow-sheave and run along upper deck.
3.14	Sent the following telegram:—"Kingsford to Atherton, San Juan. Please ask authorities have light at lighthouse to-night. Also please have light at station, or two lights one above other, would be better."
3.15	Stoppers bent on to Salina Cruz End on bow baulks, and lead from Testing-room attached to Salina Cruz End.
3.18	Let go bight of Salina Cruz End from stern sheave.
3.22	Veered away a few fathoms on Salina Cruz End through stoppers.
3.30	Made fast San Juan del Sur End to a slip rope, and passed cable over from port to starboard bow sheave.
3.45	Tests on both the Salina Cruz and San Juan del Sur Ends satisfactory. Commenced to open them out for splicing together.

Hour. P.M.

Making Final Splice and Slipping Bight—*contd.*

SUNDAY, MAY 7TH, 1893—*contd.*

3.48 — 15 fms. = 0·015 N.M. surplus cable on the end, and 9 fms. = 0·009 N.M. for this (final) splice cut off Salina Cruz End (see note at 3.5 p.m.).

4.2 — Commenced joint between Salina Cruz End (Light Deep Sea) and San Juan del Sur End (Light Intermediate type).
Light E'ly airs. Fine, bright, and clear. Calm sea.

5.3 — Joint between Salina Cruz and San Juan del Sur Ends finished and passed. Commenced splice.

5.41 — Final splice of the Salina Cruz—San Juan del Sur Section completed. Set about slipping the bight.

5.48 — Slipped final splice of the Salina Cruz—San Juan del Sur Section successfully.
Lat. 11° 1'·6 N.
Long. 86° 20'·2 W.

Position of final splice:
- Mount Papayal bearing N 61° E.
- " Orosi bearing S 86° E.
- High land of Cape Elena bearing S 73° E.

SUMMARY OF CABLE IN THE SALINA CRUZ—SAN JUAN DEL SUR SECTION.

SALINA CRUZ—

Shore-End,	No. 1953B,	pt. Sec. "3B"	= 3·923 N.M.	Piece "F" from fore tank.
Heavy Intermediate	No. 1952,	pt. Sec. "3"	= 6·990 "	
" "	" 1952A	" "3A"	= 5·000 "	
Light Intermediate	" 1951	" "2"	= 5·490 "	
Light Deep Sea	" 1235	" "10"	= 106·497 "	
" "	" "	" "11"	= 74·481 "	From after tank.
" "	" "	Sec. "9"	= 401·942 "	
" "	" "	pt. Sec. "10"	= 54·576 "	From main tank.
Light Intermediate	" 1951	" "2"	= 17·966 "	Part of Piece "E" from main tank.
Heavy Intermediate	" 1952	" "3"	= 9·490 "	
Shore-End,	" 1953B	" "3B"	= 3·495 "	
Shore-End,	No. 1953B,	pt. Sec. "3B"	= 0·055 "	Part of Piece "F" from fore tank.

SAN JUAN DEL SUR.

Total .. = 689·915 N.M.

HOUR. P.M.	**Picking up Mark Buoy.**
	SUNDAY, MAY 7TH, 1893—*contd.*
5.50	Set on full speed to pick up Mark Buoy 51H, put down on 22nd April last.
6.14	Stopped ship's engines and lowered boat.
6.29	Close by mark buoy. Stopped ship and sent boat away to dismantle buoy.
6.31	Passed drum rope to boat at buoy.
6.35	Drum rope shackled on, to moorings of buoy; commenced to heave in on rope.
6.40	Slipped buoy from moorings.
6.46	Buoy hosted on board.
6.49	Mushroom of moorings at bows.
6.51	Surf-boat hoisted up. Set on for position to take soundings.
8.0	Light SSW airs. Fine, but cloudy. Calm sea. Bar. 30·050 (82° F.). Temp. 80°·8 F. dry, 76°·5 F. wet. Sea surface 81°·5 F.
8.1	Sounding 124 S { Lat. 10° 55′·10 N, Long. 86° 18′·65 W } 103 fms. dk. gn. m.
8.21	Sounding 125 S { Lat. 10° 55′·7 N, Long. 86° 17′·8 W } 104 fms. dk. gn. m.
8.25	Set on dead slow towards San Juan del Sur, to anchor there at daylight to-morrow.
MIDNT.	Light SSE breeze. Fine, but cloudy, with lightning to the NE.

AT SAN JUAN DEL SUR.

TRANSFERRING CABLE.

S.S "SILVERTOWN."

MAY 8TH TO MAY 11TH, 1893.

AT SAN JUAN DEL SUR.

S.S. "SILVERTOWN."

Hour. A.M.	MONDAY, MAY 8th, 1893.
1.54	Sighted San Juan del Sur Light bearing N 54° E.
4.0	Light SSE breeze. Fine and clear.
6.20	Let go port anchor in 10 fms. off San Juan del Sur; veered chain to 30 fms. Position { Lot's Wife Rock bearing N 33° W. Lighthouse bearing S 51° E. Southern Extreme Point bearing S 26° E.
6.30	Lowered steam-launch. Draught of ship { Forward 21′ 0″. Aft 23′ 6″.
6.45	Lowered port cutter and commenced loading it with electrical stores, several cases of provisions, and baggage of Messrs. Schneider and Knight, who will leave ship here for duty at cable office during the laying of the San Juan del Sur—Santa Elena Section.
8.0	Calm. Fine and clear. Bar. 30·080 (80° F.). Temp. 81° F. dry, 77° F. wet. Sea surface 81°·8 F.
8.22	Mr. C. H. L. Cazalet, with Jointer Skinner, left in steam-launch for shore, taking in tow the port cutter, manned by seven cable hands, and containing electrical stores, &c. Mr. Cazalet also takes ship's papers to hand to the Port Authorities.
10.38	Port cutter returned to ship in tow of steam-launch. Mr. Cazalet reports that a Revolution has occurred here since ship left, and the Governor, who was on board a fortnight ago, has been deposed.
11.37	Mr. J. Rymer-Jones left for shore to test the Salina Cruz—San Juan del Sur Section, completed yesterday.

HOUR. P.M.	MONDAY, MAY 8TH, 1893—*contd.*
NOON.	Light SW by W breeze. Fine and bright, but cloudy. Bar. 30·050 (85° F.). Temp. 85° F. dry, 78°·2 F. wet. Sea surface 82°·5 F. Temp. in cable tanks: bottom of cone, fore tank 83° F., main tank 82½° F.
5.45	Mr. P. Bates, with D. Smith (Cable Foreman), left for shore to select a lighter for use in the landing of Shore-End later.
6.0	Temp. in cable tanks: bottom of cone, fore tank 82½° F., main tank 82° F. The tests taken to-day on the Salina Cruz—San Juan del Sur Section are highly satisfactory. A portion of the trench for southern Shore-End is opened out on the beach. This trench is 6 or 7 feet to seaward of the trench containing the northern Shore-End, landed on the 24th April last. Messrs. Schneider and Knight, with Jointer Skinner, remain on shore to-night, fixing up the testing apparatus in a spare room in the cable office, ready for use while ship is laying cable to Santa Elena.
8.0	Light S'ly wind. Fine, but very cloudy, with rainy appearance. Lightning to the SE. Bar. 30·035 (83° F.). Temp. 82°·4 F. dry, 79°·6 F. wet. Sea surface 82°·6 F.
9.0	Heavy rain, with thunder and lightning. Wind light and variable.
MIDNT.	Light variable wind. Overcast and showery, with lightning.
	TUESDAY, MAY 9TH, 1893.
A.M. 6.0	Cable hands turned to and set about preparing to commence transferring piece "D," or San Juan del Sur Southern Shore-End, from fore tank to main tank.
6.50	Tests taken on all cable in tanks by Mr. J. Rymer-Jones, with satisfactory results.

HOUR. A.M.	TUESDAY, MAY 9TH, 1893—*contd.*
7.0	Got the top end of Light Deep Sea, No. 1235, pt. Sec. "10," in main tank, and top end of piece "D," Light Intermediate, No. 1951, pt. Sec. "2," in fore tank, up on deck and commenced to open them out for joint and splice together. 11 fms.=0·011 N.M. cut off Light Deep Sea in main tank for this splice, thus reducing the length of Light Deep Sea, No. 1235, pt. Sec. "10," in main tank, to 205·383 N.M.
7.26	Commenced joint between Light Deep Sea in main tank and Light Intermediate in fore tank.
8.0	Light ENE breeze. Overcast, with thick drizzling rain at times. Bar. 30·075 (78°·5 F.). Temp. 79° F. dry, 77° F. wet. Sea surface 81°·8 F. Temp. in cable tanks: bottom of cone, fore tank 82° F., main tank 81° F.
8.30	Joint between the Light Deep Sea in main tank and Light Intermediate in fore tank finished and passed. Commenced the splice.
9.12	Splice between Light Deep Sea, No. 1235, pt. Sec. "10," in main tank, and Light Intermediate, No. 1951, pt. Sec. "2," in fore tank, completed. Set about putting turns of the bight of cable round starboard picking-up drum.
9.20	Commenced transferring piece "D" (Light Intermediate, No. 1951, pt. Sec. "2"=21·986 N.M., Heavy Intermediate, No. 1952A, pt. Sec. "3A"=4·990 N.M., and Shore End, No. 1953B, pt. Sec. "3B"=3·500 N.M.) from fore tank to main tank with starboard picking-up drum.
9.30	Mr. Lloyd left for shore to take angles to check ship's position, and to check the position of the two buoys inshore marking the route of the Central and South American Telegraphic Company's old cables.
NOON.	Light WNW breeze. Fine and clear. Bar. 30·060 (82° F.) Temp. 81°·5 F. dry, 77°·2 F. wet. Sea surface 83°·2 F. Temp. in cable tanks: bottom of cone, fore tank 82° F., main tank 81° F. 2·889 N.M. of Light Intermediate cable transferred from fore tank to main tank.

HOUR. P.M.	TUESDAY, MAY 9TH, 1893—*contd.*
3.20	Lifted port anchor to see if it was all clear, and let it go again in practically the same position as before; veered chain to 45 fms. Bearings { Lot's Wife Rock N 38° W. Lighthouse S 43° E. Southern Point S 20° E.
3.45	Capt. Morton and Mr. P. Bates left for shore to take sights for chronometers.
4.0	Light SSW breeze. Fine and bright, but cloudy. 7·510 N.M. of Light Intermediate cable transferred from fore tank to main tank.
5.33	Capt. Morton and Mr. P. Bates returned to ship. While on shore Mr. Bates arranged with Mr. C. Holmann (Agent) to have 30 labourers at Shore-End landing place on Thursday.
6.20	Transferring of cable delayed since 5.30 p.m. for want of steam. NOTE.—The fitting up of the testing apparatus and batteries in the Cable Office, for use while ship is laying cable from San Juan del Sur to Santa Elena, completed to-day.
8.0	Light ENE wind. Fine, but cloudy, with squally and rainy appearance. Vivid lightning all the evening. Bar. 30·080 (82°·6 F.) Temp. 82°·7 F. dry, 79° F. wet. Sea surface 83° F. 10·356 N.M. of Light Intermediate cable transferred from fore tank to main tank.
MIDNT.	Light variable winds. Overcast, with heavy rain at times. Much lightning all round. 13·972 N.M. of Light Intermediate cable transferred from fore tank to main tank.

	WEDNESDAY, MAY 10TH, 1893.
A.M. 4.0	Similar weather. 17·270 N.M. of Light Intermediate cable transferred from fore tank to main tank.
5.30	American mail steamer "City of Panama," bound for Panama, arrived in the port.

HOUR. A.M.	WEDNESDAY, MAY 10TH, 1893—*contd.*
8.0	Light ENE wind. Fine, but cloudy. Bar. 30·080 (80° F.). Temp. 80° F. dry, 74°·5 F. wet. Sea surface 83° F. 21·176 N.M. of Light Intermediate cable transferred from fore tank to main tank.
9.0	Splice between Light Intermediate and Heavy Intermediate in piece "D," passed off drum from fore tank to main tank. 22·287 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," transferred from fore tank. Length by Factory measurement of this piece of Light Intermediate .. .. .. =21·986 N.M. Length by Drum measurement of this piece of Light Intermediate .. .. .. =22·287 ,, Difference .. .. = 0·301 N.M. Difference probably due to slip on drum.
9.20	Capt. Morton, with Messrs. Bates and Combe, left for shore to take sights.
10.10	Messrs. Bates and Combe returned in steam-launch, with an empty lighter in tow. Made the lighter fast to ship's stern.
10.23	Messrs. Bates and Fletcher left in steam-launch to measure the distance from the northern buoy, which marks the route of the old cables near cable landing, to Cable Office. Dingey in tow of steam-launch. A small wooden mark buoy taken in the steam-launch.
10.50	S.S. "City of Panama" left the port.
NOON.	Moderate ENE breeze. Fine, but cloudy. Bar. 30·070 (84° F.). Temp. 84°·2 F. dry, 77°·3 F. wet. Sea surface=83° F.
P.M. 0.7	Steam-launch left for shore with a case of Martini-Henri rifle cartridges for Mr. Holmann.
0.54	Messrs. Bates and Fletcher, accompanied by Mr. O'Connor, of the Central and South American Telegraph Company, returned to ship. Mr. Bates reports that the distance from the northern mark buoy, immediately in front of cable landing place, to

HOUR. P.M.	WEDNESDAY, MAY 10TH, 1893—*contd.*
	the Cable Office is 289 fms., including 45 fms. from low water mark to the office.
2.0	Splice between Heavy Intermediate and Shore-End in Piece "D," passed off drum from fore tank to main tank.
	4·975 N.M. of Heavy Intermediate, No. 1952A, pt. Sec. "3A," transferred from fore tank.
	Length of Factory measurement of this piece of Heavy Intermediate .. .. .. =4·990 N.M.
	Length by Drum Measurement of this piece of Heavy Intermediate .. .. .. =4·975 ,,
	Difference.. .. .. =0·015 ,,
3.15	Capt. Morton and Mr. Combe left for shore in steam-launch to take further sights for time.
4.58	Mr. Bates went ashore to inform Agent that the labourers for the landing of the Shore-End will not be required before Friday morning.
5.35	End of Shore-End cable, No. 1953B, pt. Sec. "3B," last end of piece "D," passed off drum from fore tank to main tank.
	3·394 N.M. of Shore-End, No. 1953B, pt. Sec. "3B," transferred from fore tank.
	Length by Factory measurement of this piece of Shore-End.. .. .. =3·500 N.M.
	Length by Drum measurement of this piece of Shore-End .. .. =3·394 ,,
	Difference .. .. .. =0·106 ,,
	Total length of cable now in main tank, and spliced together, ready for laying the San Juan del Sur—Santa Elena Section=1067·526 N.M., viz.:—

Shore-End	No. 1953B, pt. Sec.	"3B"	= 3·500 N.M.	} Piece "D," from fore tank	
Heavy Int.	,, 1952A, ,, ,,	"3A"	= 4·990 ,,		
Light Int.	,, 1951 ,, ,,	"2"	= 21·986 ,,		
Light Deep Sea	,, 1235 ,, ,,	"10"	= 205·383 ,,		
,, ,,	,, ,, Sec.	"5"	= 416·067 ,,		
,, ,,	,, ,, ,,	"7"	= 415·600 ,,		
			1067·526 N.M.		

Hour. P.M.	WEDNESDAY, MAY 10TH, 1893—*contd.*
	Total length of cable now remaining in fore tank=49·970 N.M. of Light deep Sea, No. 1235B, Sec. "11A."
6.0	Temp. in cable tanks: bottom of cone, fore tank 82½° F., main tank 82° F.
6.2	Mr. J. Rymer-Jones left in steam-launch to take a few temperature soundings between ship aud Cable Office.
8.0	Light variable airs. Fine, but cloudy. Lightning to the southward. Bar. 30·060 (85° F.). Temp. 83°·6 F. dry, 76°·8 F. wet. Sea surface 83° F.
	THURSDAY, MAY 11TH, 1893.
A.M. 8.0	Light E'ly wind. Fine, clear weather. Slight SW swell. Bar. 30·100 (81° F.). Temp. 81° F. dry, 76° F. wet. Sea surface 82°·5 F. Temp. in cable tanks: bottom of cone, fore tank 82° F., main tank 82° F.
8.40	American mail steamer "Starbuck" entered the port.
10.28	Mr. P. Bates left for shore to make arrangements for the landing of Shore-End.
NOON.	Moderate ENE breeze. Fine and clear. Slight swell coming into the anchorage. Bar. 30·060 (85° F.). Temp. 84°·3 F. dry, 76° F. wet. Sea surface 83°·6 F. Temp. in cable tanks: bottom of cone, fore tank 83½° F., main tank 83½° F.
P.M. 0.30	Coiled a length of 4½" rope in lighter, hanging astern of ship.
0.40	Mail steamer "Starbuck" left the port.
2.0	All cable in main tank tested, with satisfactory results. Set about sealing the top end (Shore-End cable) of the cable in main tank ready for landing.

Hour. P.M.	THURSDAY, MAY 11TH, 1893—*contd.*
2.18	Commenced coiling hauling-off ropes in both cutters, 7 coils of assorted 4″, 4½″, and 5″ ropes in each boat.
2.53	Steam-launch, with dingey in tow, left for shore, taking 2 spider wheels, 2 sand anchors, chain, rope, shovels, and all gear required on the beach for the landing of Shore-End.
3.45	Finished coiling hauling-off ropes in cutters.
4.15	Hauled end of Shore-End cable, No. 1953B, pt. Sec. "3B," from main tank, along leads and three times round paying-out drum to stern sheave.
4.17	Steam-launch, with dingey in tow, returned from shore, bringing a note from Mr. Bates, stating that the length from Cable House to low water mark is 395 feet.
4.25	Commenced coiling 350 fms. of Shore-End cable in lighter, astern of ship; marking cable at every 50 fms. with knots of spunyarn, and at 70 fms. from the end of cable the cable is marked with white manilla yarn.
4.30	Steam-launch left for shore.
5.5	0·347 N.M. (or 350 fms.) of Shore-End cable from main tank abaft paying-out drum. Bent on the spun yarn mark, with seven knots tied in it, and paid out on cable till 350 fms. mark in lighter.
5.30	Lighter, containing the 350 fms. of Shore-End cable, fast to a line from each quarter of ship, and the bight of cable between ship's stern sheave, and lighter made fast on the bows of lighter. Cable in lighter well covered with canvas, over which water was poured.
5.37	Steam-launch returned with Mr. P. Bates and Mr. Holmann (Agent). Mr. Bates reports having taken Shore-End landing gear round to cable landing place (which is immediately to shoreward of the northern buoy marking old cables), one sand anchor and spider sheave (southern) placed in position, flag "B," put up at position of southern spider sheave and flag "L," put up to mark position for northern spider-wheel. Distance between flags=100 fms. Sand anchors are placed at high water mark.

Hour. P.M.	THURSDAY, MAY 11TH, 1893—*contd.*
8.0	Moderate S'ly wind. Fine, bright, and clear. Slight S'ly swell. Bar. 30·050 (84° F.). Temp. 84°·5 F. dry, 75°·5 F. wet. Sea surface 83° F.
8.35	All cable in main tank (to sealed end in lighter) tested by Mr. J. Rymer-Jones; results satisfactory. Carpenter employed during the day fitting up lighter ready for laying cable.

LAYING THE SAN JUAN DEL SUR—SANTA ELENA SECTION.

LANDING SAN JUAN DEL SUR SOUTH SHORE-END.

PAYING OUT SAN JUAN DEL SUR SOUTH HEAVY AND LIGHT INTERMEDIATES.

PAYING OUT MAIN CABLE FROM SAN JUAN DEL SUR TOWARDS BUOY ON SANTA ELENA END.

COMPLETION OF SECTION.

S.S. "SILVERTOWN."

MAY 12TH TO MAY 18TH, 1893.

LAYING THE SAN JUAN DEL SUR—SANTA ELENA SECTION.

S.S. "SILVERTOWN."

Hour. A.M.	Landing San Juan del Sur South Shore-End.
	FRIDAY, MAY 12th, 1893.
6.0	Cable hands turned to and set about getting balloon buoys, &c., aft to quarter deck.
6.27	Staff and cable hands left in steam-launch for shore.
7.0	Observed a number of native labourers working at trench between Cable Office and water's edge, and shore party at Cable landing place putting northern spider wheel in position, &c.
7.58	German steamer "Miranda" arrived from the northward and anchored to shoreward of ship.
8.0	Calm. Fine clear weather. Slight SW swell. Bar. 30·080 (82° F.). Temp. 82°·8 F. dry, 77°·5 F. wet. Sea surface 82°·5 F. Temp. in cable tanks, bottom of cone: fore tank 83° F., main tank $83\frac{1}{2}$° F.
8.8	Mr. Ogilvie (3rd officer) left in steam-launch to ask the Captain of the "Miranda" if he would anchor his vessel a little more to the south to permit "Silvertown" to run lines ashore.
8.18	Mr. Ogilvie returned and reported that the Captain of the "Miranda" said that if his vessel was not clear when swung round to anchor, he would take up another position.
8.31	Mr. Ogilvie left in steam-launch for the "Miranda," to explain to the Captain the direction in which the "Silvertown" wished to run lines for the landing of Shore-End.
8.57	Steam-launch took port cutter, containing 7 coils of rope for hauling-off line, in tow for beach

HOUR. A.M.	**Landing San Juan del Sur South Shore-End**—*contd.*
	FRIDAY, MAY 12TH, 1893—*contd.*
9.0	Observed the "Miranda" underweigh for a position more to the SSW, as requested.
9.12	Observed end of rope from port cutter landed near northern spider-wheel by natives, and hands on shore running it round the northern spider-wheel along beach towards southern spider-wheel, at Cable landing place.
9.15	Observed the "Miranda" anchor again, but still to the north of the northern mark buoy, and immediately in the way between "Silvertown" and Cable landing place.
9.20	Observed port cutter, in tow of steam-launch, coming towards ship, paying out rope from beach to ship.
9.34	Port cutter arrived at starboard bow and passed bight of 7th rope inboard over starboard bow sheave, rope run along to starboard picking-up drum.
9.37	Capt. Morton left for the S.S. "Miranda," to explain to the Captain where we wish him to anchor.
9.47	Capt. Morton returned to ship, with the information that the Captain of the "Miranda" will not move his ship.
9.58	Signalled to shore, "Move cable spider-wheel clear of "Miranda's" stern.
10.7	Steam-launch left for shore, taking starboard cutter, containing 7 coils of rope for hauling-off line, in tow.
10.20	Coiled a further length of 50 fms. of Shore-End cable in the lighter hanging astern of ship. 0·395 N.M. (or 400 fms.) of Shore-End Cable put in the lighter.
10.25	S.S. "Miranda" now swung round stern more towards Cable Office, and, therefore, clear of the direction in which ship wishes to run rope ashore to southern, or cable, spider-sheave on beach. Signalled to shore, "Cable spider O.K., get line ashore."
10.40	Observed end of rope from starboard cutter landed at southern spider-wheel by 4 natives, who swam off from the beach for it, and hands on the beach moving southern spider-sheave more to the northward.

Hour. A.M.	**Landing San Juan del Sur South Shore-End**—*contd.*
	FRIDAY, MAY 12TH, 1893—*contd.*
	NOTE.—The spider-sheave was moved 18 fms. to the northward, reducing the distance between spider-sheaves to 82 fms.
10.45	Observed starboard cutter, in tow of steam-launch, coming towards ship, paying out rope from beach to ship. Ropes shackled together on the beach.
10.56	Starboard cutter, in tow of steam-launch, arrived at ship's stern and passed bight of 6th rope from the beach inboard over stern sheave, thus completing endless messenger between ship and cable landing place. Cut the 6th rope on board, about 10 fms. from the shackle outboard, and set about bending it on to the Shore-End Cable on stern baulks, making it fast to cable near 400 fms. mark in the lighter and to bows of lighter.
11.0	Cable well fast to messenger both on board lighter and on ship, and cable hanging over lighter's stern made fast to the stern of lighter. Ship's quarter lines, and coal baskets, hanging astern of lighter, hauled on board ship.
11.3	"All ready" signal hoisted on the beach.
11.12	Commenced to heave in on messenger over starboard bow sheave with starboard picking-up drum. Ship heading seawards with stern facing Cable landing place. Position of cable landing { Lat. 11° 15′·34 N. Long. 85° 52′·88 W.
11.26	Messenger now tightening out and hauling lighter towards beach. Commenced to pay out Shore-End Cable. 1st balloon buoy bent on. 0·416 N.M. of Shore-End, paid out from main tank.
NOON.	Light WSW airs. Fine and clear. Slight swell. Bar. 30·020 (84° F.). Temp. 84°·2 F. dry, 78°·3 F. wet. Sea surface 84°·8 F.
P.M. 0.10	Signalled to shore, "Put stake in beach where trench takes water's edge." Lighter now near beach. Stopped heaving in on messenger and paying out cable. Thirty-two balloons out-board.

HOUR. P.M.

Landing San Juan del Sur South Shore-End—*contd.*

FRIDAY, MAY 12TH, 1893—*contd.*

0·988 N.M. of Shore-End Cable, No. 1953B, pt. Sec. "3B," paid out from main tank, including 0·395 N.M. of Shore-End Cable in the lighter.

0.37 Dingey now taking end of a rope from lighter to beach.

0.39 Observed three or four natives swimming out from beach to dingey.

0.51 Steam-launch signalled to shore, "When stopper is fast signal ship to let go hauling-off rope."
Natives now landed rope from dingey.

0.53 Shore signalled to steam-launch, "Line broken."

1.5 Observed lighter put overboard the bight of cable fast to messenger from ship, and start in tow of steam-launch, paying out cable between beach and mark buoys towards Cable Office. Messenger from ship holding bight of cable abreast of southern spider sheave.
NOTE.—As far as Mr. Bates could judge the distance from the southern spider sheave to this bight of cable is about 130 fms.

1.21 Observed bight on the end of cable passed from lighter to beach in front of Cable Office.

1.33 Observed all hands taking bight of cable up towards Cable Office.

1.35 Port and starboard cutters left ship to take balloon-buoys off cable between ship and beach.

1.45 Shore signalled, "Take current off, now cut."

Position of ship:
Lot's Wife Rock and No. 1 Point < 13° 44′ 0″
No. 2 Point and No. 1 Point < 56° 12′ 0″
" " Cable House < 64° 50′ 0″
No. 3 " " < 60° 46′ 0″
Lot's Wife Rock bearing N 36° W.
No. 3 Point bearing S 23½° E.

Lat. 11° 15′·18 N.
Long. 85° 53′·59 W.
Distance, by chart, from ship to Cable Office (along route followed by lighter)=0·85 N.M.
Distance, by chart, from ship to southern spider sheave =0·73 N.M.

S.S. "SILVERTOWN."

HOUR. P.M.	**Landing San Juan del Sur South Shore-End**—*contd.*
	FRIDAY, MAY 12TH, 1893—*contd.*
1.55	Mr. Way, of the Central and South American Telegraph Company, came on board.
2.20	Observed natives burying cable in trench in front of Cable Office, down to water's edge.
2.25	Cable hands returning to spider wheels on beach to make rope on bight of cable fast to the sand anchor of the southern spider wheel and to cast messenger adrift so that the remainder of it may be hauled on board.
3.0	"All clear" signal hoisted on beach. Commenced heaving in on messenger with starboard picking-up drum.
3.15	Staff and cable hands returned from shore in steam-launch, which has in tow starboard cutter and dingey and twenty-five balloon buoys.
	NOTE.—69 fms.=0·068 N.M. was cut off the end of the Shore-End when landed from the lighter, as the length landed was found to be that much in excess of the amount required to reach the Cable Office.
	0·988 N.M. minus 0·068 N.M.=0·920 N.M. of Shore-End cable, No. 1953B, pt. Sec. "3B," now laid between ship and Cable Office.
	The 0·068 N.M. cut off on the beach is laid in the trench and buried alongside the Shore-End, as spare cable, according to Mr. H. Kingsford's instructions.
3.20	Steam launch left to tow off port cutter and balloon buoys.
3.30	Steam launch returned with port cutter and the remainder of balloon buoys in tow.
3.55	Starboard cutter and dingey hoisted on board.
4.10	End of rope that formed messenger came inboard.
4.20	Signalled to shore, "When shall we send boat for hands and gear?" Shore replied, "Send boat now."
4.27	Steam launch and cutter left for shore.
4.33	Put another turn of Shore-End cable round paying-out drum, making four in all.

HOUR. P.M.	**Landing San Juan del Sur South Shore-End**—*contd.*
	FRIDAY, MAY 12TH, 1893—*contd.*
4.50	Shore signalled, "Call on mirror."
4.52	Spoke shore through cable with mirror instrument in testing room.
5.13	Port cutter now taking buoy "70" off the chain with which it was made fast to the northern Shore-End laid by this ship on 25th April last.
5.20	Cutter with W. Tillyer and five cable hands returned to Ship, with buoy No. 70, and gear from the beach, except one sand anchor left on jetty. The other sand anchor is made fast to the bight of cable near beach with a short piece of chain and $4\frac{1}{2}''$ rope, so as to avoid ship dragging the bight of cable on getting underweigh.
5.40	Hoisted up port cutter, and set about preparing to get ship underweigh.
5.50	S.S. "Miranda" left the port.
6.10	Commenced to heave up anchor. Draught of ship { Fwd. 20′ 11″. Aft, 23′ 7″.
6.12	Dynamometer=40 cwt. Weight on brake levers=1125 lbs.
6.14	Put engine of paying-out machine out of gear, and lifted brakes right up.
6.19	Cable commenced running out very slowly.
6.23	Anchor aweigh. Set on "slow ahead."
	Paying out San Juan del Sur South Shore-End.
6.25	Anchor at bows. SHIP ON COURSE S 70° W.
6.27	Increased ship's engines to 25 revs. per min.
6.40	Ship's engines=25 revs. per min. Drum=21 revs. per min.=3·5 KTS.
6.50	Increased ship's engines to 28 revs. per min.
7.0	Ship's engines=29 revs. per min. Drum=23 revs. per min=4·0 KTS. Dynamometer=13 to 22 cwt. Patent log=1·8 N.M.

HOUR. P.M.	
	Paying out San Juan del Sur South Heavy Intermediate.
	FRIDAY, MAY 12TH, 1893—*contd.*
7.8	SPLICE between Shore-End, No. 1953B, pt. Sec. "3B," and Heavy Intermediate, No. 1952A, pt. Sec. "3A," from main tank passed off drum. Shore-End, No. 1953B, pt. Sec. "3B," paid out from main tank by Factory measurement .. .. .. =3·432 N.M. Cut off on beach.. .. =0·068 " = 3·364 N.M. Paid out by Drum measurement=3·392 N.M. Cut off on beach.. .. =0·068 " = 3·324 " Difference .. .. = 0·040 N.M. Patent log=2·5 N.M. Depth=27 fms. Dynamometer fell from 18 to 8 cwt. on splice passing outboard. The length of this piece of Shore-End cable by starboard picking-up drum on the 10th inst. (=3·394 N.M.) verifies the length by paying-out drum as above: from which it appears that the length by Factory measurement (originally 3·500 N.M.) is in excess although the length by Electrical measurement is given as 3·550 N.M. Position of splice { Lat. 11° 14′·30 N. Long. 85° 55′·95 W. CHANGED COURSE TO S 47° W. CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE S 70° W (MADE GOOD S 70° W)=2·512 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 70° W (MADE GOOD S 70° W)=2·510 N.M. SLACK= —°/∘.
7.30	1·511 N.M. of Heavy Intermediate, No. 1952A, pt. Sec. "3A," paid out from main tank. Patent log=3·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 4·943 N.M. Depth=30 fms. Drum=23½ revs. per min.=4·1 KTS. Ship's engines=28½ revs. per min. Weight on brake levers=1125 lbs. Dynamometer=7½ cwt. Strophometer=22 revs.
8.0	Moderate S'ly. wind. Fine and clear, with lightning. Slight SW swell.

HOUR. P.M.

Paying out San Juan del Sur South Heavy Intermediate—*contd.*

FRIDAY, MAY 12TH, 1893—*contd.*

Bar. 30·000 (83° F.). Temp. 83° F. dry, 78°·8 F. wet. Sea surface 83° F.

3·653 N.M. of Heavy Intermediate, No. 1952A, pt. Sec. "3A," paid out from main tank. Patent log=5·8 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 7·085 N.M.

Depth=40 fms.

Drum=24 revs. per min.=4·28 KTS. Ship's engines=29 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=$7\frac{1}{2}$ cwt. Strophometer=22 revs.

Paying out San Juan del Sur South Light Intermediate.

8.18 SPLICE between Heavy Intermediate, No. 1952A, pt. Sec. "3A," and Light Intermediate, No. 1951, pt. Sec. "2," from main tank, passed off drum.

4·977 N.M. of Heavy Intermediate, No. 1952A, pt. Sec. "3A," paid out from main tank. Patent log=7·1 N.M.

Length by Factory measurement of this piece of Heavy Intermediate paid out	.. =	4·990 N.M.
Length by Drum measurement of this piece of Heavy Intermediate paid out ..	.. =	4·977 "
Difference ..	.. =	0·013 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 8·422 N.M.

Depth=45 fms.

Position of splice { Lat. 11° 11′·1 N. / Long. 85° 59′·82 W.

Dynamometer fell to zero on splice passing out.

8.30 0·878 N.M. of Light Intermedite, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=7·7 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 9·300 N.M.

Depth=50 fms.

Drum=24 revs. per min.=4·2 KTS. Ship's engines=28 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5 cwt. Strophometer=22 revs.

Put brakes down a little and brought strain up to about 5 or $5\frac{1}{4}$ cwt.

HOUR. P.M.	**Paying out San Juan del Sur South Light Intermediate**—*contd.*
	FRIDAY, MAY 12TH, 1893—*contd.*
9.0	2·936 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=9·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 11·358 N.M. Depth=60 fms. Drum=23 revs. per min.=4·1 KTS. Ship's engines=28 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5 cwt. Strophometer=22 revs.
9.18	Increased ship's engines to 30 revs. per min.
9.30	4·899 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid from main tank. Patent log=11·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 13·321 N.M. Depth=65 fms. Drum=22 revs. per min.=3·9 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5 cwt. Strophometer=20 to 25 revs.
10.0	7·075 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=13·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 15·497 N.M. Depth=65 fms. Drum=24 revs. per min.=4·2 KTS. Ship's engines=31 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5 cwt. Strophometer=21 to 24 revs.
10.15	Increased ship's engines to 32 revs. per minute.
10.30	9·443 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=15·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 17·865 N.M. Depth=65 fms. Drum=27 revs. per min.=4·7 KTS. Ship's engines=32½ revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5 cwt. Strophometer=24 to 27 revs.
11.0	11·852 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=18·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 20·274 N.M. Depth=70 fms.

HOUR. P.M.

Paying out San Juan del Sur South Light Intermediate—*contd.*

FRIDAY, MAY 12TH, 1893—*contd.*

Drum=27 revs. per min.=4·7 KTS. Ship's engines=32 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5 cwt. Strophometer=25 revs.

11.30 14·283 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=20·7 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 22·705 N.M.

Depth=90 fms.

Drum=27½ revs. per min.=4·8 KTS. Ship's engines=32½ revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5 cwt. Strophometer=25½ revs.

MIDNT. Moderate SSE wind. Fine, bright and clear, with lightning to the WNW. Slight sea and swell from S'd.

Bar. 29·980 (81° F.). Temp. 80° F. dry, 77° F. wet. Sea surface 81°·7 F.

16·885 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=23·1 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 25·307 N.M.

Depth=95 fms.

Drum=29½ revs. per min.=5·2 KTS. Ship's engines=32½ revs. per min. Weight on brake levers=1125 lbs. Dynamometer=5 cwt. Strophometer=26 to 29 revs.

NOTE.—From midnight 12th until 0.30 a.m. 13th, drum suddenly increased about 8 revs. per min., 5 cwt. strain being carried. 0.40 a.m. increased strain to 7 cwt. Drum decreased to 26 revs. Ship probably passed over a small depression; depth was supposed to be 100 fms.

SATURDAY, MAY 13TH, 1893.

A.M.

0.30 20·175 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=25·6 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 28·597 N.M.

Depth=98 fms.

Drum=37 revs. per min.=6·51 KTS. Ship's engines=33 revs. per min. Weight on brake levers=1125 lbs. Dynamometer=(lifting). Strophometer=35 to 36 revs.

HOUR. A.M.

Paying out San Juan del Sur South Light Intermediate—*contd.*

SATURDAY, MAY 13TH, 1893—*contd.*

0.40 According to the speed of drum (which has increased rapidly during last half-hour) ship is evidently running into deep water. Lowered brakes to bring strain up to about 7 cwt., and reduced weight on brake levers to 568 lbs.

Paying out from San Juan del Sur to Buoy on Santa Elena End.

Paying out Light Deep Sea.

0.52 SPLICE between Light Intermediate, No. 1951, pt. Sec. "2" and Light Deep Sea, No. 1235, pt. Sec. "10," from main tank, passed off drum.

22·286 N.M. of Light Intermediate, No. 1951, pt. Sec. "2," paid out from main tank. Patent log=27·3 N.M.

Length by Factory measurement of this piece of Light Intermediate .. .. .. =21·986 N.M.
Length by Drum measurement of this piece of Light Intermediate .. .. .. =22·286 „

Difference .. = 0·300 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 30·408 N.M.

Depth=104 fms.

NOTE.—Length by Electrical measurement of this piece of Light Intermediate.. =22·323 N.M.
Length by starboard picking-up drum on 10th inst. .. .. =22·287 „
Length by paying-out drum as above .. .. =22·286 „

From the above measurements it appears that the length by Factory measurement, viz., 21·986 N.M. is not correct, although that length is borne out by Shipping Drum measurement.

CHANGED COURSE TO S $17\frac{1}{2}°$ W.

CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, S 47° W (MADE GOOD S 47° W)=26·976 N.M.

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 47° W (MADE GOOD S 47° W)=25·650 N.M.

HOUR. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SATURDAY, MAY 13TH, 1893—*contd.*
	SLACK=5·2%. Position of splice { Lat. 10° 56′·9 N. Long. 86° 16′·8 W.
0.55	Speed of drum and strain decreased. Lifted brakes right up.
1.0	0·579 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=27·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=30·987 N.M. Depth=110 fms. Drum=30½ revs. per min.=5·37 KTS. Ship's engines=32½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=24 to 27 revs. Increased ship's engines to 38 revs. per min.
1.30	3·139 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=30·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=33·547 N.M. Depth=110 fms. Drum=29 revs. per min.=5·1 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=26 to 30 revs.
2.0	5·705 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=33·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=36·113 N.M. Depth=112 fms. Drum=29 revs. per min.=5·1 KTS. Ship's engines=38½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=25 to 28 revs. Increased ship's engines to 42 revs. per min.
2.30	8·569 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=37·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=38·977 N.M. Depth=150 fms.

Hour. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SATURDAY, MAY 13TH, 1893—*contd.*
	Drum=32 revs. per min.=5·64 KTS. Ship's engines=42 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=27 to 34 revs.
3.0	11·523 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=40·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=41·931 N.M. Depth=200 fms. Drum=33 revs. per min.=5·81 KTS. Ship's engines=43 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=29 to 32 revs.
3 30	14·454 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=44·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=44·862 N.M. Depth=300 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=42 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=30 revs.
4.0	Moderate SE'ly breeze. Fine weather, but cloudy. Slight southerly sea. Bar. 29·930 (81° F.). Temp. 81·0° F. dry, 77·0° F. wet. Sea surface 82° F. 17·387 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=47·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=47·795 N.M. Depth=400 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=42 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=28 to 33 revs.
4.30	20·251 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10,' paid out from main tank. Patent log=51·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=50·659 N.M. Depth=500 fms.

Hour. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SATURDAY, MAY 13TH, 1893—*contd.*
	Drum=32½ revs. per min.=5·7 KTS. Ship's engines=42 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=30 revs.
5.0	23·246 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=55·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=53·654 N.M. Depth=700 fms. Drum=34 revs. per min.=5·98 KTS. Ship's engines=42 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=32 revs.
5.30	26·392 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=58·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=56·800 N.M. Depth=850 fms. Drum=35½ revs. per min.=6·2 KTS. Ship's engines=42½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting) Strophometer=33 revs.
6.0	29·652 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=62·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=60·060 N.M. Depth=950 fms. Drum=37 revs. per min.=6·5 KTS. Ship's engines=42 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=32 revs. Position by land { Rincon del Volcan Viejo bearing N 73° E. High land of Cape Elena ,, N 55½° E. Mount Gongora (S. Vicente) bearing N 78½° E. Mount Orosi bearing N 63½° E. Lat. 10° 30′·8 N. Long. 86° 26′·0 W.
6.15	Put cable over "old man" fair lead to ease friction on main quadrant.

Hour. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SATURDAY, MAY 13TH, 1893—*contd.*
6 30	33·157 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=66·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 63·565 N.M. Depth=1000 fms. Drum=39½ revs. per min.=7·0 KTS. Ship's engines=42 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=38 revs. Increased ship's engines to 45 revs. per min.
7.0	36·968 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=70·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 67·376 N.M. Depth=1200 fms. Drum=43 revs. per min.=7·5 KTS. Ship's engines=45 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=42 revs. Increased ship's engines to 48 revs. per min.
7.30	40·940 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=74·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 71·348 N.M. Depth=1300 fms. Drum=45 revs. per min.=7·9 KTS. Ship's engines=46 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=43 revs. CHANGED COURSE TO S 37° E. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, S 17½° W (MADE GOOD S 19¾° W)=40·940 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 17½° W (MADE GOOD S 19¾° W)=37·507 N.M. SLACK=9·1 °/₀. Position { Lat. 10° 21′·6 N. / Long. 86° 29′·7 W.
8.0	44·824 N.M. of Light Deep Sea, No. 1235, part Sec. "10," paid out from main tank. Patent log=78·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 75·232 N.M.

HOUR. A.M.	
	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*
	SATURDAY, MAY 13TH, 1893—*contd.*
	Depth=1350 fms. Drum=44 revs. per min.=7·74 KTS. Ship's engines=45 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=40 revs. Brakes right up throughout the watch. Light SSE wind. Fine, but very cloudy. Slight sea and swell from SE. Bar. 30·000 (81° F.). Temp. 81° F. dry, 78°·3 F. wet. Sea surface 82°·5 F. Temp. in fore cable tank=83° F. Position { Mount Orosi bearing N 55° E. High land of Cape Elena bearing N 46° E. Current observed since 6.0 a.m.=N 12° W. 3·0 N.M.=1·5 KTS.
8.30	48·800 N.M. of Light Deep Sea, No. 1235, part Sec. "10," paid out from main tank. Patent log=82·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=79·208 N.M. Depth=1300 fms. Drum=45 revs. per min.=7·9 KTS. Ship's engines=45 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=41 revs.
9.0	52·934 N.M. of Light Deep Sea, No. 1235, part Sec. "10," paid out from main tank. Patent log=86·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=83·342 N.M. Depth=1200 fms. Drum=46½ revs. per min.=8·2 KTS. Ship's engines=46 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer 41 to 44 revs.
9.30	57·036 N.M. of Light Deep Sea, No. 1235, part Sec. "10," paid out from main tank. Patent log=90·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=87·444 N.M. Depth=1200 fms. Drum=46½ revs. per min.=8·2 KTS. Ship's engines=48 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=43 revs.

HOUR. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SATURDAY, MAY 13TH, 1893—*contd.*
10.0	61·276 N.M. of Light Deep Sea, No. 1235, part. Sec. "10," paid out from main tank. Patent log=94·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=91·684 N.M. Depth=1000 fms. Drum=48 revs. per min.=8·45 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=43 revs. Severe thunderstorm passing over ship since 9.0 a.m. with heavy rain.
10.30	65·443 N.M. of Light Deep Sea, No. 1235, part Sec. "10," paid out from main tank. Patent log=98·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=95·851 N.M. Depth=1000 fms. Drum=47 revs. per min.=8·27 KTS. Ship's engines=45 to 48 revs. per min. (ship pitching). Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=41 to 43 revs. Rain now ceased. Overcast and hazy all round, with thunder at times. Long S'ly swell.
11.0	69·619 N.M. of Light Deep Sea, No. 1235, part Sec. "10," paid out from main tank. Patent log=102·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=100·027 N.M. Depth=1000 fms. Drum=$47\frac{1}{2}$ revs. per min.=8·36 KTS. Ship's engines=$46\frac{1}{2}$ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=41 to 43 revs.
11.30	73·732 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=107·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=104·140 N.M. Depth=1000 fms. Drum=$46\frac{1}{2}$ revs. per min.=8·18 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=42 revs.
NOON	(Engineer's time.) Light variable airs and calms. Cloudy, with rain at times. Moderate S'ly swell.

HOUR. P M

Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*

SATURDAY, MAY 13TH, 1893—*contd.*

Bar. 30·010 (77° F.). Temp. 76°·5 F. dry, 75° F. wet. Sea surface 80°·8 F.

77·743 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=111·7 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 108·151 N.M.

Depth=1000 fms.

Drum=45½ revs. per min.=8·01 KTS. Ship's engines=48 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=42 revs.

Temp. in fore cable tank, bottom of cone=82½° F.

0.10 (Noon by observations.)

79·050 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=113·1 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 109·458 N.M.

Depth=1000 fms.

TOTAL CABLE LAID, BY FACTORY MEASUREMENT, FROM SAN JUAN DEL SUR OFFICE=109·458 N.M.

TOTAL DISTANCE, BY CHART, OVERGROUND, FROM SAN JUAN DEL SUR OFFICE=102·217 N.M.

SLACK=7·1°/ₒ.

Position { Lat. 9° 53′·1 N.
Long. 86° 8′·7 W.

Current observed since 8 a.m.=N 53° W., 6·2 N.M.= 1·5 KTS.

0.30 81·780 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=115·8 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 112·188 N.M.

Depth=1400 fms.

Drum=45½ revs. per min.=8·01 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=40 revs.

1.0 85·923 N.M. of Light Deep Sea, No. 1235, pt. Sec, "10," paid out from main tank. Patent log=120·1 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 116·331 N.M.

Hour. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SATURDAY, MAY 13TH, 1893—*contd.*
	Depth=1400 fms. Drum=47 revs. per min.=8·27 KTS. Ship's engines=48 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=42 revs.
1.30	90·113 N.M of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=124·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 120·521 N.M. Depth=1400 fms. Drum=47 revs. per min.=8·27 KTS. Ship's engines=47½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=42 revs.
2.0	94·280 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=128·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 124·688 N.M. Depth=1400 fms. Drum=47 revs. per min.=8·27 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=42 revs.
2.30	98·491 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=133·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 128·899 N.M. Depth=1500 fms. Drum=47½ revs. per min.=8·3 KTS. Ship's engines=48 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=42 revs.
3.0	102·655 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=137·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 133·063 N.M. Depth=1500 fms. Drum=47 revs. per min.=8·27 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=40 to 43 revs.

HOUR. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SATURDAY, MAY 13TH, 1893—*contd.*
3.30	106·736 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=141·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=137·144 N.M. Depth=1700 fms. Drum=46 revs. per min.=8·09 KTS. Ship's engines=47½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=38 to 43 revs.
4.0	Moderate to fresh SSW breeze. Fine, but overcast and cloudy. Moderate S'ly sea. Bar. 29·930 (77° F.) Temp. 76°·5 F. dry, 74°·5 F. wet. Sea surface 81° F. 110·797 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=146·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=141·205 N.M. Depth=1700 fms. Drum=46 revs. per min.=8·09 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=40 to 43 revs. Brakes right up throughout the watch.
4.30	114·908 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=150·3 N.M TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=145·316 N.M. Depth=1450 fms. Drum=47 revs. per min.=8·27 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=42 revs.
5.0	119·022 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=154·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=149·430 N.M. Depth=1450 fms. Drum=47 revs. per min.=8·27 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=42 revs.
5.30	123·247 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=158·9 N.M.

HOUR. P.M.

Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*

SATURDAY, MAY 13TH, 1893—*contd.*

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=153·655 N.M.

Depth=1500 fms.

Drum=48 revs. per min.=8·4 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=44 revs.

6.0 127·496 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=163·1 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=157·904 N.M.

Depth=1550 fms.

Drum=48 revs. per min.=8·4 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=43 revs.

Temp. in fore tank, bottom of cone=83° F.

CHANGED COURSE TO S 27° E.

CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, S 37° E (MADE GOOD S 36° E)=86·556 N.M.

DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 37° E (MADE GOOD S 36° E)=81·200 N.M.

SLACK=6·6 °/₀.

Position { Lat. 9° 16′·7 N, Long. 85° 41′·2 W } Cape Blanco bearing about N 69° E.

6.30 131·740 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=167·5 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=162·148 N.M.

Depth=1500 fms

Drum=48 revs. per min.=8·4 KTS. Ship's engines=47½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=41 to 44 revs.

7.0 135·892 of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=171·6 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=166·300 N.M.

Depth=1450 fms.

Drum=47 revs. per min.=8·27 KTS. Ship's engines=47 revs per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=40 revs.

HOUR. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SATURDAY, MAY 13TH, 1893—*contd.*
7.30	140·073 N.M. of Light Deep Sea, No. 1235 pt. Sec. "10," paid out from main tank. Patent log=175·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=170·481 N.M. Depth=1450 fms. Drum=47½ revs. per min.=8·3 KTS. Ship's engines=47½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=43 revs.
8.0	Moderate S.W. wind. Fine, but very cloudy. Moderate sea and swell from the S'd. Bar. 30·000 (79° F.). Temp. 78° F. dry, 76° F. wet. Sea surface 80°·2 F. 144·363 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=179·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE—174·771 N.M. Depth=1450 fms. Drum=48½ revs. per min.=8·58 KTS. Ship's engines=48 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=44 revs. Brakes up throughout the watch.
8.30	148·795 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=184·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=179·203 N.M. Depth=1450 fms. Drum=50 revs. per min.=8·8 KTS. Ship's engines=48 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=43 to 47 revs.
9.0	153·333 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=188·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=183·741 N.M. Depth=1450 fms. Drum=51½ revs. per min.=9·06 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=47 revs.
9.30	157·941 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=193·0 N.M.

Hour. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SATURDAY, MAY 13TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=188·349 N.M. Depth=1450 fms. Drum=52 revs. per min.=9·15 KTS. Ship's engines=48 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=46 to 49 revs.
10.0	162·569 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=197·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=192·977 N.M. Depth=1450 fms. Drum=$52\frac{1}{2}$ revs. per min.=9·24 KTS. Ship's engines=48 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=45 to 48 revs.
10.30	167·051 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=201·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=197·459 N.M. Depth=1450 fms. Drum=51 revs. per min.=8·97 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=43 to 46 revs.
11.0	171·426 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=205·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=201·834 N.M. Depth=1450 fms. Drum=$49\frac{1}{2}$ revs. per min.=8·71 KTS. Ship's engines=$47\frac{1}{2}$ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=43 to 46 revs.
11.30	175·955 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=210·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=206·363 N.M. Depth=1400 fms. Drum=51 revs. per min.=8·97 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=44 to 48 revs.

S.S. "SILVERTOWN."

Hour.	
	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*
	SATURDAY, MAY 13TH, 1893—*contd.*
MIDNT.	Moderate S'ly wind. Cloudy, with rain at times Moderate S'ly sea and swell. Bar. 30·030 (79° F.). Temp. 79° F. dry, 76° F. wet. Sea surface 80°·2. F. 180·666 NM. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=214·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=211·074 N.M. Depth=1400 fms. Drum=53½ revs. per min.=9·4 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=46 to 49 revs. Brakes right up throughout the watch.
	SUNDAY, MAY 14TH, 1893.
A.M. 0.30	185·363 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=218·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =215·771 N.M. Depth=1400 fms. Drum=53 revs. per min.=9·32 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=46 to 47 revs.
1.0	189·959 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=222·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =220·367 N.M. Depth=1400 fms. Drum=52 revs. per min.=9·15 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=46 revs.
1.30	194·646 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=227·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =225·054 N.M.

Hour. A.M.	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*
	SUNDAY, MAY 14TH, 1893—*contd.*
	Depth=1400 fms. Drum=53 revs per min.=9·32 KTS. Ship's engines=48 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=45 to 48 revs.
2.0	199·325 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=231·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =229·733 N.M. Depth=1350 fms. Drum=53 revs. per min.=9·32 KTS. Ship's engines=48 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=45 to 48 revs.
2.30	203·957 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=235·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =234·365 N.M. Depth=1350 fms. Drum=52½ revs. per min.=9·24 KTS. Ship's engines=47½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=45 to 48 revs.
2.38	SPLICE in Light Deep Sea, No. 1235, between pt. Sec. "10," and Sec. "5," from main tank passed off drum. 205·210 N.M. of Light Deep Sea, No. 1235, pt. Sec. "10," paid out from main tank. Patent log=236·9 N.M. Length by Factory measurement of this piece of Light Deep Sea paid out .. .. =205·383 N.M. Length by Drum measurement of this piece of Light Deep Sea paid out .. .. =205·210 ,, Difference .. .. .. = 0·173 N.M TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =235·791 N.M. Depth=1350 fms. Position of splice { Lat. 8° 11'·6 N. Long. 85° 7'·3 W.
3.0	3·543 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=239·9 N.M.

S.S. "SILVERTOWN."

HOUR. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SUNDAY, MAY 14TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =239·334 N.M. Depth=1350 fms. Drum=54½ revs. per min.=9·59 KTS. Ship's engines=48 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=48 revs.
3.30	8·295 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=244·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 244·086 N.M. Depth=1350 fms. Drum=54 revs. per min.=9·5 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=48 revs.
4.0	Moderate S'ly wind. Fine, but cloudy weather. Moderate S'ly sea and swell. Bar. 29·950 (80° F.). Temp. 79°·0 F. dry, 76°·5 F. wet. Sea surface 80°·0 F. 13·027 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=248·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 248·818 N.M. Depth=1350 fms. Drum=53½ revs. per min.=9·4 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=45 to 48 revs. Brakes right up throughout the watch.
4.30	17·655 N.M. of Light Deep Sea, No. 1235, Sec. "5,' paid out from main tank. Patent log=252·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 253·446 N.M. Depth=1400 fms. Drum=52½ revs. per min.=9·2 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=46 revs.
5.0	22·222 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=257·0 N.M.

Hour. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SUNDAY, MAY 14TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 258·013 N.M. Depth=1300 fms. Drum=52 revs. per min.=9·15 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=47 revs.
5.30	26·607 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=261·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 262·398 N.M. Depth=1150 fms. Drum=50 revs. per min.=8·8 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=44 revs.
6.0	30·897 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=265·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 266·688 N.M. Depth=1000 fms. Drum=48½ revs. per min.=8.5 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=45 revs.
6.9	32·171 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=267·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 267·962 N.M. Depth=730 fms. CHANGED COURSE TO S 20° E. CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, S 27° E (MADE GOOD S 27° E)=110·058 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE S 27° E (MADE GOOD S 27° E)=102·760 N.M. SLACK=7·1°/ₒ Position { Lat. 7° 45′·2 N. Long. 84° 53′·9 W.
6.30	35·458 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=269·9 N.M.

Hour. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SUNDAY, MAY 14TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=271·249 N.M. Depth=750 fms. Drum=50 revs. per min.=8·8 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=44 revs.
7.0	40·178 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=274·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=275·969 N.M. Depth=750 fms. Drum=53½ revs. per min=9·4 KTS. Ship's engines=47½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=46 revs.
7.30	44·954 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=278·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=280·745 N.M. Depth=750 fms. Drum=54 revs. per min.=9·5 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=48 revs.
8.0	Light SW wind. Overcast and squally, with much rain during the morning. Moderate SW swell. Bar. 30·045 (78° F.). Temp. 76° F. dry, 74°·8 F. wet. Sea surface 79° F. 49·647 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=283·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=285·438 N.M. Depth=750 fms. Drum=53 revs. per min.=9·3 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=46 revs. Brakes up throughout the watch. Temp. in fore cable tank, bottom of cone=80½° F.

HOUR. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SUNDAY, MAY 14TH, 1893—*contd.*
8.30	54·221 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=287·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=290·012 N.M. Depth=800 fms. Drum=52 revs. per min.=9·15 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=46 to 49 revs.
9.0	58·905 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=291·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=294·696 N.M. Depth=850 fms. Drum=53 revs. per min.=9·3 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=45 revs.
9.30	63·475 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=295·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=299·266 N.M. Depth=880 fms. Drum=52 revs. per min.=9·15 KTS. Ship's engines=47 revs per min. Weight on brake levers=568 lbs. Dynamometer=(nil.). Strophometer=46 revs. Continual heavy rain. Overcast thick weather.
10.0	68·162 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=299·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=303·953 N.M. Depth=900 fms. Drum=53 revs. per min.=9·33 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=46 to 49 revs.
10.30	72·847 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=304·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=308·638 N.M. Depth=900 fms.

Hour. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SUNDAY, MAY 14TH, 1893—*contd.*
	Drum=53 revs. per min.=9·33 KTS. Ship's engines=47½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=45 to 49 revs.
11.0	77·561 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=308·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=313·352 N.M. Depth=900 fms. Drum=53½ revs. per min.=9·41 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=45 to 48 revs.
11.30	82·331 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=313·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=318·122 N.M. Depth=900 fms. Drum=54 revs. per min.=9·5 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=47 to 50 revs. Weather clearing up, rain ceased.
NOON.	(Engineer's time.) Light to moderate SW wind. Cloudy and squally, with rain at times. Slight SW sea and swell. Bar. 30·050 (77° F.). Temp. 76° F. dry, 75° F. wet. Sea surface 79°·5 F. 87·242 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=317·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=323·033 N.M. Depth=900 fms. Drum=55½ revs. per min.=9·75 KTS. Ship's engines=47½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=50 revs. Brakes up throughout the watch. Temperature in fore cable tank: bottom of cone=82½° F. Sun obscured, observations impracticable. CABLE BY INDICATOR, CORRECTED, PAID OUT SINCE OBSERVED NOON YESTERDAY=213·575 N.M. DISTANCE BY CHART OVERGROUND=197·560 N.M.

Hour. P.M.	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*
	SUNDAY, MAY 14TH, 1893—*contd.*
	Slack=8·1 %. Position by D.R. corrected { Lat. 6° 59′·1 N. Long. 84° 36′·3 W.
0.30	92·165 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=321·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 327·956 N.M. Depth=860 fms. Drum=55½ revs. per min.=9·75 KTS. Ship's engines=48 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=49 to 50 revs.
1.0	97·041 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=326·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 332·832 N.M. Depth=860 fms. Drum=55 revs. per min.=9·7 KTS. Ship's engines=48 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=48 to 51 revs.
1.10	Overcast, with heavy rain.
1.30	102·093 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=330·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 337·884 N.M. Depth=860 fms. Drum=57 revs. per min.=10·03 KTS. Ship's engines= 48 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=49 to 52 revs.
1.50	Put brakes down sufficiently to bring strain up to 6 cwt., and thus reduce speed of cable to about 9 KTS.
1.55	Decreased ship's engines to 45 revs. per min.
2.0	107·122 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=334·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 342·913 N.M.

HOUR. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SUNDAY, MAY 14TH, 1893—*contd.*
	Depth=860 fms. Drum=57 revs. per min.=10·03 KTS. Ship's engines=46 revs. per min. Weight on brake levers=568 lbs. Dynamometer=6 cwt. Strophometer=47 to 50 revs.
2.7	Decreased ship's engines to 42 revs. per min.
2.30	111·751 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=338·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=347·542 N.M. Depth=890 fms. Drum=52½ revs. per min=9·2 KTS. Ship's engines=41½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=6½ cwt. Strophometer=45 revs.
3.0	116·153 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=342·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=351·944 N.M. Depth=890 fms. Drum=50 revs. per min.=8·8 KTS. Ship's engines=41 revs. per min. Weight on brake levers=568 lbs. Dynamometer=7 cwt. Strophometer=42 to 46 revs.
3.23	Brakes right up to permit cable to run out faster.
3.30	120·420 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=345·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=356·211 N.M. Depth=890 fms. Drum=48 revs. per min.=8·45 KTS. Ship's engines=41 revs. per min. Weight on break levers=568 lbs. Dynamometer=(nil). Strophometer=41 to 45 revs.
3.40	Increased ship's engines to 45 revs. per min.
4.0	Moderate WSW wind. Overcast, with heavy rain throughout nearly the whole watch. Slight SW sea and swell. Bar. 29·970 (78° F.). Temp. 78°·6 F. dry, 76°·8 F. wet. Sea surface 80°·5 F.

S.S. "SILVERTOWN."

HOUR. P.M.	
	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*

SUNDAY, MAY 14TH, 1893—*contd.*

124·819 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=349·6 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 360.610 N.M.

Depth=890 fms.

Drum=50 revs. per min.=8·8 KTS. Ship's engines=43½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=42 to 47 revs.

4.30 129‘486 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=353·8 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 365·277 N.M.

Depth=890 fms.

Drum=53 revs. per min.=9·3 KTS. Ship's engines=45½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=48 revs.

5.0 134·117 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=357·9 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 369·908 N.M.

Depth=900 fms.

Drum=52½ revs. per min.=9·2 KTS. Ship's engines=44½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=48 revs.

5.5 Increased ship's engines to 48 revs. per min.

5.30 138·937 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=362·0 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 374·728 N.M.

Depth=900 fms.

Drum=54½ revs. per min.=9·6 KTS. Ship's engines=46 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=49 revs.

6.0 143·931 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=366·3 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 379·722 N.M.

Hour. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	SUNDAY, MAY 14TH, 1893—*contd.*
	Depth=950 fms. Drum=56½ revs. per min.=9·9 KTS. Ship's engines=47½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=50 revs. Temp. in fore cable tank, bottom of cone=81½° F.
6.30	148·945 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=370·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=384·736 N.M. Depth=950 fms. Drum=57 revs. per min.=10·0 KTS. Ship's engines=47½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=50 revs.
6.44	151·214 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=372·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=387·005 N.M. Depth=950 fms. Approximate position by stars { Lat. 6° 8′·2 N. Long. 84° 17′·5 W. Current observed since noon yesterday=N 21° W, 5·6 N.M. =0·18 KTS.
7.0	153·974 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=375·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=389·765 N.M. Depth=1000 fms. Drum=57 revs. per min.=10·0 KTS. Ship's engines=47 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=51 revs.
7.30	159·132 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=379·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=394·923 N.M. Depth=1050 fms.

Hour. P.M.	
	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd*
	SUNDAY, MAY 14TH, 1893—*contd.*
	Drum=$58\frac{1}{2}$ revs. per min.=10·3 KTS. Ship's engines=$47\frac{1}{2}$ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=52 revs.
7.35	Decreased ship's engines to 42 revs. per min., to reduce speed of drum.
8.0	Moderate WSW breeze. Fine, bright and clear. Moderate SW sea and swell. Bar. 30·050 (79°·6 F.). Temp. 79°·6 F. dry, 75°·4 F. wet. Sea surface 81° F. 164·017 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=383·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=399·808 N.M. Depth=1200 fms. Drum=$55\frac{1}{2}$ revs. per min.=9·7 KTS. Ship's engines=43 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=47 revs. Brakes right up throughout the watch.
8.25	Decreased ship's engines to 40 revs. per min., for engine room purposes.
8.30	168·569 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=387·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=404·360 N.M. Depth=1250 fms. Drum=$51\frac{1}{2}$ revs. per min.=9·06 KTS. Ship's engines=40 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=43 to 47 revs.
9.0	173·015 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=390·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=408·806 N.M. Depth=1300 fms. Drum=$50\frac{1}{2}$ revs. per min.=8·89 KTS. Ship's engines=40 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=43 to 46 revs.

HOUR. P.M.

Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*

SUNDAY, MAY 14TH, 1893—*contd.*

9.10 Decreased ship's engines to 38 revs. per min.

9.30 177·312 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=394·1 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 413·103 N.M.

Depth=1400 fms.

Drum=49 revs. per min.=8·6 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=43 revs.

10.0 181·549 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=397·5 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 417·340 N.M.

Depth=1500 fms.

Drum=48 revs. per min.=8·45 KTS. Ship's engines=37 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=39 to 43 revs.

10.30 185·760 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log.=400·9 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 421·551 N.M.

Depth=1550 fms.

Drum=48 revs. per min.=8·45 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=40 to 44 revs.

11.0 189·997 N.M of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log.=404·1 N.M.

TOTAL CABLE LAID from SAN JUAN DEL SUR OFFICE= 425·788 N.M.

Depth=1600 fms.

Drum=48 revs. per min.=8·45 KTS. Ship's engines=37 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=40 to 44 revs.

11.30 194·164 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=407·4 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 429·955 N.M.

Hour. P.M.	
	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*
	SUNDAY, MAY 14TH, 1893—*contd.*
	Depth=1650 fms. Drum=47 revs. per min.=8·27 KTS. Ship's engines=37 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=39 to 43 revs.
11.58	Let brakes down sufficiently to raise strain to between 5 and $5\frac{1}{2}$ cwt.
MIDNT.	Moderate SSW wind. Fine and bright, but cloudy Moderate SW sea and swell. Bar. 30·050 (79° F.). Temp. 79° F. dry, 75°·5 F. wet. Sea surface 80°·1 F. 198·277 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=410·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 434·068 N.M. Depth=1700 fms. Drum=$46\frac{1}{2}$ revs. per min.=8·18 KTS. Ship's engines=37 revs. per min. Weight on brake levers=568 lbs. Dynamometer=$5\frac{1}{2}$ cwt. Strophometer=40 to 44 revs. Brakes up throughout the watch till 11.58 p.m.
	MONDAY, MAY 15th, 1893.
A.M. 0.30	202·453 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=413·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 438·244 N.M. Depth=1750 fms. Drum=47 revs. per min.=8·27 KTS. Ship's engines=$37\frac{1}{2}$ revs. per min. Weight on brake levers=568 lbs. Dynamometer=$5\frac{1}{2}$ cwt. Strophometer=41 to 44 revs.
1.0	206·667 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=416·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 442·458 N.M. Depth=1750 fms.

Hour. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	MONDAY, MAY 15TH, 1893—*contd.*
	Drum=47½ revs. per min.=8·32 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5 cwt. Strophometer=40 to 43 revs.
1.30	210·904 N.M. of Light Deep Sea, No. 1235. Sec. "5," paid out from main tank. Patent log=420·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=446·695 N.M. Depth=1750 fms. Drum=48 revs. per min.=8·44 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5 cwt. Strophometer=41 to 44 revs.
2.0	215·127 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=423·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=450·918 N.M. Depth=1800 fms. Drum=48 revs. per min.=8·44 KTS. Ship's engines=37½ revs. per min. Weight on brake levers=568 lbs. Dynamometer = 5¼ cwt. Strophometer=39 to 44 revs.
2.30	219·447 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=426·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=455·238 N.M. Depth=1750 fms. Drum=49 revs. per min.=8·62 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5 cwt. Strophometer=41 to 44 revs.
3.0	223·719 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=429·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=459·510 N.M. Depth=1700 fms. Drum=48½ revs. per min.=8·5 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5½ cwt. Strophometer=41 to 44 revs.
3.30	227·921 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=433·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=463·712 N.M.

Hour. A.M.	
	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*
	MONDAY, MAY 15th, 1893—*contd.*
	Depth=1700 fms. Drum=47½ revs. per min.=8·32 kts. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=40 to 43 revs.
4.0	Moderate SSW wind. Fine, but cloudy. Slight SW sea and swell. Bar. 30·030 (79° F.). Temp. 78°·2 F. dry, 75°·4 F. wet. Sea surface 80° F. 232·082 n.m. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=436·4 n.m. Total Cable laid from San Juan del Sur Office=467·873 n.m. Depth=1700 fms. Drum=47 revs. per min.=8·27 kts. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5½ cwt. Strophometer=40 to 43 revs.
4.30	236·311 n.m. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=439·4 n.m. Total Cable laid from San Juan del Sur Office=472·102 n.m. Depth=1750 fms. Drum=48 revs. per min.=8·4 kts. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=42 revs.
5.0	240·516 n.m. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=442·9 n.m. Total Cable laid from San Juan del Sur Office=476·307 n.m. Depth=1700 fms. Drum=47½ revs. per min.=8·3 kts. Ship's engines=37½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=43 revs.
5.21	243·446 n.m. of Light Deep Sea, No, 1235, Sec. "5," paid out from main tank. Patent log=445·3 n.m. Total Cable laid from San Juan del Sur Office=479·237 n.m. Depth=1700 fms.

HOUR. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	MONDAY, MAY 15TH, 1893—*contd.*
	Approximate position by stars { Lat. 4° 46′·5 N. Long. 83° 47′·8 W. Current observed since 6.44 P.M. yesterday = S 19° E, 14·0 N.M. = 1·3 KTS.
5.30	244·688 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log = 446·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE = 480·479 N.M. Depth = 1700 fms. Drum = 47 revs. per min. = 8·27 KTS. Ship's engines = 37 revs. per min. Weight on brake levers = 568 lbs. Dynamometer = (nil). Strophometer = 42 revs.
6.0	248·934 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log = 449·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE = 484·725 N.M. Depth = 1700 fms. Drum = 48 revs. per min. = 8·4 KTS. Ship's engines = 38 revs. per min. Weight on brake levers = 568 lbs. Dynamometer = (nil). Strophometer = 42 revs.
6.7	249·905 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log = 450·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE = 485·696 N.M. Depth = 1820 fms. CHANGED COURSE TO S 16° E. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, S 20° E (MADE GOOD S 20° E) = 217·734 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 20° E (MADE GOOD S 20° E) = 195·620 N.M. Slack = 11·3 %. Position { Lat. 4° 41′·6 N. Long. 83° 46′·0 W.
6.30	253·127 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log = 452·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE = 488·918 N.M.

Hour. A.M.	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*
	MONDAY, MAY 15TH, 1893—*contd.*
	Depth=1820 fms. Drum=47½ revs. per min.=8·3 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=42 revs.
7.0	257·332 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=456·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=493·123 N.M. Depth=1800 fms. Drum=47½ revs. per min.=8·3 KTS. Ship's engines=38½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=41 revs.
7.30	261·555 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=459·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=497·346 N.M. Depth=1800 fms. Drum=48 revs. per min.=8·4 KTS. Ship's engines=38½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=42 revs.
8.0	Moderate SSW wind. Fine, but cloudy. Moderate S'ly sea. Bar. 30·120 (79° F.). Temp. 78°·8 F. dry, 75° F. wet. Sea surface 81° F. Temp. in fore cable tank, bottom of cone=80° F. Spoke the Liverpool barque "Remonstrant," heading SSE. 265·851 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=462·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=501·642 N.M. Depth=1800 fms. Drum=49 revs. per min.=8·6 KTS. Ship's engines=38½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=43 revs. Brakes up throughout the watch.
8.30	270·159 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=466·0 N.M.

Hour. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	MONDAY, MAY 15TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=505·950 N.M. Depth=1800 fms. Drum=49 revs per min.=8·62 KTS. Ship's engines=38½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=42 to 46 revs.
9.0	274·411 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=469·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=510·202 N.M. Depth=1800 fms. Drum=48 revs. per min.=8·4 KTS. Ship's engines=38½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=43 revs.
9.30	278·534 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=472·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=514·325 N.M. Depth=1800 fms. Drum=46½ revs. per min.=8·18 KTS. Ship's engines=37½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=5½ cwt. Strophometer=40 revs.
9.45	Since 9 a.m. filled the tank under paying-out machine with water, to test the effect upon dynamometer; on tank being full, and when running on the outside turns of a flake of cable, the dynamometer stood at 7 cwt., and on commencing a fresh flake the dynamometer dropped to 5¾ cwt. On emptying the tank again, dynamometer fell to zero.
10.0	282·577 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=475·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=518·368 N.M. Depth=1800 fms. Drum=46 revs. per min.=8·09 KTS. Ship's engines—38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=37 to 44 revs.

S.S. "SILVERTOWN."

Hour. A.M. — **Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.***

MONDAY, MAY 15TH, 1893—*contd.*

10.30 — 286·650 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=479·0 N.M.

Total Cable laid from San Juan del Sur Office= 522·441 N.M.

Depth=1800 fms.

Drum=46 revs. per min.=8·09 kts. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil.). Strophometer=37 to 43 revs.

11.0 — 290·810 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=482·2 N.M.

Total Cable laid from San Juan del Sur Office= 526·601 N.M.

Depth=1800 fms.

Drum=47 revs. per min.=8·27 kts. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil.). Strophometer=41 to 43 revs.

11.30 — 295·030 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=485·5 N.M.

Total Cable laid from San Juan del Sur Office= 530·821 N.M.

Depth=1800 fms.

Drum=48 revs. per min.=8·45 kts. Ship's engines=$38\frac{1}{2}$ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=39 to 43 revs.

11.56 — (Noon by observations.)

298·720 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=488·6 N.M.

Total Cable laid from San Juan del Sur Office= 534·511 N.M.

Depth=1790 fms.

Cable by Indicator, paid out since Noon (by Engineer's time) yesterday=211·478 N.M.

Distance, by Chart, overground since Noon (by Engineer's time) yesterday=190·645 N.M.

Slack=10·9%

Position { Lat. 3° 59′·3 N.
Long. 83° 32′·5 W.

Current observed since 5.21 A.M.=S. 34° E., 4·1 N.M.= 0·6 KT.

HOUR.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	MONDAY, MAY 15TH, 1893—*contd.*
NOON.	(Engineer's Time.) Fresh S by W breeze. Fine, but slightly cloudy. Moderate S'ly sea. Bar. 30·110 (79° F.). Temp. 78°·F. dry, 74°·6 F. wet. Sea surface 81°·8 F. 299·188 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=488·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 534·979 N.M. Depth=1790 fms. Drum=47 revs. per min.=8·27 KTS. Ship's engines=38½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=36 to 43 revs. Brakes up throughout the watch. Temp. in fore cable tank, bottom of cone=80½° F.
P.M. 0.30	303·119 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=492·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 538·910 N.M. Depth=1765 fms. Drum=44½ revs. per min.=7·8 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=37 to 40 revs.
0.50	Increased ship's engines to 40 revs. per min.
1.0	307·033 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=495·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 542·824 N.M. Depth=1760 fms. Drum=44½ revs. per min.=7·8 KTS. Ship's engines=40½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=39 to 42 revs.
1.30	311·138 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=499·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 546·929 N.M. Depth=1750 fms.

HOUR. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	MONDAY, MAY 15TH, 1893—*contd.*
	Drum=46½ revs. per min.=8·15 KTS. Ship's engines=40 revs. per min. Weight on brake levers=563 lbs. Dynamometer=(nil). Strophometer=41 revs.
2.0	315·346 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=503·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =551·137 N.M. Depth=1750 fms. Drum=47½ revs. per min.=8·35 KTS. Ship's engines=40½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=42 revs.
2.30	319·530 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=506·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =555·321 N.M. Depth=1710 fms. Drum=47½ revs. per min.=8·35 KTS. Ship's engines=40 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=39 to 43 revs.
2.35	Decreased ship's engines to 38 revs. per min.
3.0	323·379 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=510·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =559·170 N.M. Depth=1710 fms. Drum=43½ revs. per min.=7·6 KTS. Ship's engines=36 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=37 revs.
3.30	327·251 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=514·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =563·042 N.M. Depth=1690 fms. Drum=44 revs. per min.=7·74 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=37 to 40 revs.

Hour. P.M.	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*
	MONDAY, MAY 15TH, 1893—*contd.*
4.0	Moderate SSW wind. Fine, but slightly cloudy. Slight SW sea and swell. Bar. 30·030 (78° F.). Temp. 78°·0 F. dry, 74°·7 F. wet. Sea surface 80°·0 F. 331·159 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=517·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =566·950 N.M. Depth=1650 fms. Drum=44 revs. per min.=7·74 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=37 to 41 revs. Brakes right up throughout the watch.
4.30	335·161 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=521·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =570·952 N.M. Depth=1650 fms. Drum=45½ revs. per min.=8·0 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=39 revs.
5.0	339·063 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=524·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =574·854 N.M. Depth=1650 fms. Drum=44 revs. per min.=7·74 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=39 revs.
5.30	343·033 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=528·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=578·824 N.M. Depth=1650 fms. Drum=45 revs. per min.=7·9 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=40 revs.

Hour. P.M.

Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*

MONDAY, MAY 15TH, 1893—*contd.*

6.0 — 347·034 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=531·6 N.M.

Total Cable laid from San Juan del Sur Office=582·825 N.M.

Depth=1650 fms.

Drum=45 revs. per min.=7·9 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=40 revs.

Temp. in fore cable tank, bottom of cone=80° F.

6.30 — 351·021 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=535·2 N.M.

Total Cable laid from San Juan del Sur Office=586·812 N.M.

Depth=1700 fms.

Drum=45 revs. per min.=7·9 KTS. Ship's engines=38½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=40 revs.

6.37 — 351·922 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=536·2 N.M.

Total Cable laid from San Juan del Sur Office=587·713 N.M.

Depth=1700 fms.

Approximate position by stars { Lat. 3° 15′·9 N.
Long. 83° 14·7 W.

Current observed since noon=N 66° E, 5·2 N.M.=0·8 KT.

7.0 — 355·082 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=538·9 N.M.

Total Cable laid from San Juan del Sur Office=590·873 N.M.

Depth=1700 fms.

Drum=46 revs. per min.=8·0 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=42 revs.

7.30 — 359·173 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=542·4 N.M.

Total Cable laid from San Juan del Sur Office=594·964 N.M.

HOUR. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.***
	MONDAY, MAY 15TH, 1893—*contd.*
	Depth=1750 fms. Drum=46½ revs. per min.=8·1 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=42 revs.
8.0	Fresh SW wind. Fine, but cloudy. Moderate S to SSW sea and swell. Bar. 30·100 (78° F.). Temp. 76°·5 F. dry, 73°·5 F. wet. Sea surface 79°·5 F. 363·204 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=546·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=598·995 N.M. Depth=1770 fms. Drum=46 revs. per min.=8·0 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=41 revs. Brakes right up throughout the watch. Decreased ship's engines to 32 revs. per min., so as to make Buoy on Santa Elena End at daylight on Thursday next.
8.30	366·738 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=548·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=602·529 N.M. Depth=1780 fms. Drum=40 revs. per min.=7·04 KTS. Ship's engines=31½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=34 revs.
9.0	370·066 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=551·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=605·857 N.M. Depth=1790 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=31½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=34 to 37 revs.

HOUR. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	MONDAY, MAY 15TH, 1893—*contd.*
9.5	Filled tank under paying-out machine with water, and put brakes down slightly, bringing strain up to 6 cwt.
9.10	Increased ship's engines to 33 revs. per min., to make ship's speed = 6 knots.
9.30	373·515 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log = 554·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE = 609·306 N.M. Depth = 1800 fms. Drum = 39 revs. per min. = 6·86 KTS. Ship's engines = 33 revs. per min. Weight on brake levers = 568 lbs. Dynamometer = 6 cwt. Strophometer = 35 to 37 revs.
10.0	377·049 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log = 557·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE = 612·840 N.M. Depth = 1800 fms. Drum = 40 revs. per min. = 7·04 KTS. Ship's engines = 33 revs. per min. Weight on brake levers = 568 lbs. Dynamometer = $5\frac{3}{4}$ to 7 cwt. Strophometer = 35 revs.
10.30	380·509 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log = 560·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE = 616·300 N.M. Depth = 1800 fms. Drum = 39 revs. per min. = 6·86 KTS. Ship's engines = 34 revs. per min. Weight on brake levers = 568 lbs. Dynamometer = $5\frac{3}{4}$ to 7 cwt. Strophometer = 36 revs.
11.0	384·005 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log = 563·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE = 619·796 N.M. Depth = 1800 fms. Drum = $39\frac{1}{2}$ revs. per min. = 6·95 KTS. Ship's engines = 34 revs. per min. Weight on brake levers = 568 lbs. Dynamometer = $5\frac{3}{4}$ to 7 cwt. Strophometer = 35 revs.

Hour. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	MONDAY, MAY 15TH, 1893—*contd.*
11.30	387·510 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=565·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=623·301 N.M. Depth=1800 fms. Drum=40 revs. per min.=7·04 KTS. Ship's engines=33 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5¾ to 7 cwt. Strophometer=35½ revs.
MIDNT.	Moderate SW breeze. Fine, but cloudy. Slight SW sea and swell. Bar. 30·120 (76° F.). Temp. 75°·8 F. dry, 72°·8 F. wet. Sea surface 78°·3 F. 391·032 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=568·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=626·823 N.M. Depth=1800 fms. Drum=40 revs. per min.=7·04 KTS. Ship's engines=33 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5¾ to 7 cwt. Strophometer=35½ revs.
	TUESDAY, MAY 16TH, 1893.
A.M. 0.30	394·651 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=571·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=630·442 N.M. Depth=1850 fms. Drum=41 revs. per min.=7·21 KTS. Ship's engines=34 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5¾ to 7 cwt. Strophometer=36 to 37 revs.
1.0	398·138 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=574·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=633·929 N.M. Depth=1800 fms.

HOUR. A.M.

Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*

TUESDAY, MAY 16TH, 1893—*contd.*

Drum=$39\frac{1}{2}$ revs. per min.=6·95 KTS. Ship's engines=33 revs. per min. Weight on brake levers=568 lbs. Dynamometer=$5\frac{3}{4}$ to 7 cwt. Strophometer=34 to 35 revs.

1.30 — 401·711 N.M. of Light Deep Sea, No. 1235, Sec. "5" paid out from main tank. Patent log=577·4 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 637·502 N.M.

Depth=1800 fms.

Drum=40 revs. per min.=7·04 KTS. Ship's engines=33 revs. per min. Weight on brake levers=568 lbs. Dynamometer=$5\frac{3}{4}$ to 7 cwt. Strophometer=36 revs.

2.0 — 405·327 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=580·3 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 641·118 N.M.

Depth=1800 fms.

Drum=41 revs. per min.=7·21 KTS. Ship's engines=34 revs. per min. Weight on brake levers=568 lbs. Dynamometer=$5\frac{3}{4}$ to 7 cwt. Strophometer=36 revs.

2.30 — 408·976 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=583·2 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 644·767 N.M.

Depth=1800 fms.

Drum=41 revs. per min.=7·21 KTS. Ship's engines=33 revs. per min. Weight on brake levers=568 lbs. Dynamometer=$5\frac{3}{4}$ to 7 cwt. Strophometer=$36\frac{1}{2}$ revs.

3.0 — 412·601 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=586·1 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 648·392 N.M.

Depth=1700 fms.

Drum=41 revs. per min.=7·21 KTS. Ship's engines=33 revs. per min. Weight on brake levers=568 lbs. Dynamometer=$5\frac{3}{4}$ to 7 cwt. Strophometer=35 to 38 revs.

S.S. "SILVERTOWN."

Hour. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*

TUESDAY, MAY 16TH, 1893—*contd.*

3.27 SPLICE in Light Deep Sea, No. 1235, between sections "5" and "7" from main tank passed off drum.

415·847 N.M. of Light Deep Sea, No. 1235, Sec. "5," paid out from main tank. Patent log=589·0 N.M.

Length by Factory measurement of Light Deep Sea, Sec. "5" .. .. = 416·067 N.M.
Length by Drum measurement of Light Deep Sea, Sec. "5" .. .. = 415·847 „

Difference .. = 0·220 N.M.

205·383 N.M. + 416·067 N.M. = 621·450 N.M. of Light Deep Sea cable laid.

Total Cable laid from San Juan del Sur Office= 651·858 N.M.

Depth=1660 fms.

Position of splice { Lat. 2° 20′·7 N. Long. 82° 55′·4 W.

3.30 0·350 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=589·0 N.M.

Total Cable laid from San Juan del Sur Office= 652·208 N.M.

Depth=1660 fms.

Drum=$40\frac{1}{2}$ revs. per min.=7·13 KTS. Ship's engines= 34 revs. per min. Weight on brake levers=568 lbs. Dynamometer=$5\frac{3}{4}$ to 7 cwt. Strophometer=37 revs.

4.0 Moderate SW wind. Fine, but cloudy. Moderate sea from SW.

Bar. 30·030 (77° F.). Temp. 75° F. dry, 72° F. wet. Sea surface 78° F.

3·975 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=592·1 N.M.

Total Cable laid from San Juan del Sur Office= 655·833 N.M.

Depth=1660 fms.

Drum=41 revs. per min.=7·21 KTS. Ship's engines=$33\frac{1}{2}$ revs. per min. Weight on brake levers=568 lbs. Dynamometer=5 cwt. Strophometer=37 revs.

Decreased ship's engines to 30 revs. per min.

HOUR. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	TUESDAY, MAY 16TH, 1893—*contd.*
	Refilled tank under paying-out machine with water and increased strain to 7 cwt.
4.28	Took all weights off brake levers and put brakes down.
4.30	7·356 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=594·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 659·214 N.M. Depth=1750 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=30 revs. per min. Weight on brake levers=(nil). Dynamometer=7 cwt. Strophometer=35 revs.
5.0	10·779 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=597·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 662·637 N.M. Depth=1800 fms. Drum=39 revs. per min.=6·8 KTS. Ship's engines=30 revs. per min. Weight on brake levers=(nil). Dynamometer=6½ cwt. Strophometer=35 revs.
5.10	Weight on brake levers increased to 284 lbs. (4 weights).
5.30	14·156 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=599·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 666·014 N.M. Depth=1850 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=7 cwt. Strophometer=35 revs.
6.0	17·538 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=602·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 669·396 N.M. Depth=1800 fms. Drum=38 revs. per min.=6·68 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=7 cwt. Strophometer=34 revs.

Hour. A. M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	TUESDAY, MAY 16TH, 1893—*contd.*
6.30	20·936 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=604·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=672·794 N.M. Depth=1900 fms. Drum=38½ revs. per min.=6·7 KTS. Ship's engines=30 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6½ cwt. Strophometer=35 revs.
6.50	Weight on brake levers increased to 426 lbs. (6 weights).
7.0	24·226 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=607·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=676·084 N.M. Depth=1900 fms. Drum=37 revs. per min.=6·5 KTS. Ship's engines=30 revs. per min. Weight on brake levers=426 lbs. Dynamometer=8 cwt. Strophometer=33 revs.
7.30	27·513 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=609·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=679·371 N.M. Depth=1850 fms. Drum=37 revs. per min.=6·5 KTS. Ship's engines=30 revs. per min. Weight on brake levers=426 lbs. Dynamometer=8 cwt. Strophometer=34 revs.
8.0	Light SW wind. Fine, but cloudy. Smooth sea, with slight southerly swell. Bar. 30·135 (75° F.). Temp. 75°·5 F. dry, 72°·3 F. wet. Sea surface 78°·0 F. Temp. in fore cable tank, bottom of cone=80½° F. 30·861 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=612·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=682·719 N.M. Depth=1850 fms.

HOUR. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	TUESDAY, MAY 16TH, 1893—*contd.*
	Drum=38 revs. per min.=6·68 KTS. Ship's engines=30 revs. per min. Weight on brake levers=426 lbs. Dynamometer=8 cwt. Strophometer=34 revs.
8.30	34·252 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=615·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=686·110 N.M. Depth=1800 fms. Drum=38½ revs. per min.=6·75 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=7½ cwt. Strophometer=35½ revs.
9.0	37·641 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=617·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=689·499 N.M. Depth=1800 fms. Drum=38½ revs. per min.=6·7 KTS. Ship's engines=30 revs. per min. Weight on brake levers=426 lbs. Dynamometer=7½ cwt. Strophometer=34½ revs.
9.30	41·090 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=620·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=692.948 N.M. Depth=1800 fms. Drum=39 revs. per min.=6·86 KTS. Ship's engines=30 revs. per min. Weight on brake levers=426 lbs. Dynamometer=7¼ cwt. Strophometer=34 revs.
10.0	44·507 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=622·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=696·365 N.M. Depth=1750 fms. Drum=39 revs. per min.=6·86 KTS. Ship's engines=30 revs. per min. Weight on brake levers=426 lbs. Dynamometer=6½ cwt. Strophometer=35 revs.
10.5	Eased brakes, slightly and reduced strain to between 5¾ and 6½ cwt.

HOUR A.M	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	TUESDAY, MAY 16TH, 1893—*contd.*
10.30	48·017 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=625·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=699·875 N.M. Depth=1730 fms. Drum=40 revs. per min.=7·04 KTS. Ship's engines=30 revs. per min. Weight on brake levers=426 lbs. Dynamometer=5¾ to 6½ cwt. Strophometer=34 to 37 revs.
11.0	51·592 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=628·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=703·450 N.M. Depth=1730 fms. Drum=40½ revs. per min.=7·13 KTS. Ship's engines=30 revs. per min. Weight on brake levers=426 lbs. Dynamometer=5½ to 6½ cwt. Strophometer=37 revs.
11.12	Increased weight on brake levers to 568 lbs. (8 weights).
11.30	55·074 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=630·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=706·932 N.M. Depth=1730 fms. Drum=39½ revs. per min.=6·95 KTS. Ship's engines=30 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5½ to 6½ cwt. Strophometer=36 revs.
11.53	(Noon by observations.) 57·760 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=632·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=709·618 N.M. Depth=1730 fms. CABLE, BY INDICATOR, CORRECTED, PAID OUT SINCE OBSERVED NOON YESTERDAY=175·107 N.M. DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=155·300 N.M. SLACK=12·70°/₀.

S.S. "SILVERTOWN."

Hour. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	TUESDAY, MAY 16TH, 1893—*contd.*
	Position { Lat 1° 33′·9 N. Long. 82° 38′·0 W. Current observed since 6.37 p.m. yesterday=S 64° E, 18·7 N.M.=1·08 KTS. COURSE MADE GOOD SINCE 6.7 A.M. YESTERDAY=S 20½° E. CABLE, BY INDICATOR, PAID OUT SINCE 6.7 A.M. YESTERDAY=223·922 N.M. DISTANCE, BY CHART, OVERGROUND, SINCE 6.7 A.M. YESTERDAY=199·625 N.M. SLACK=12·2°/ₒ.
NOON.	(Engineer's time.) Light SSW wind. Fine and bright, but cloudy. Slight SSW sea. Bar. 30·100 (76° F.). Temp. 76° F. dry, 72°·5 F. wet. Sea surface 77°·7 F. 58·528 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=633·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=710·386 N.M. Depth=1730 fms. Drum=39 revs. per min.=6·86 KTS. Ship's engines=31 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5½ to 6½ cwt. Strophometer=36 revs. Temp. in fore cable tank, bottom of cone=81° F.
P.M. 0.30	61·818 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=635·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=713·676 N.M. Depth=1730 fms. Drum=37 revs. per min.=6·51 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=5 to 6 cwt. Strophometer=33 to 36 revs. Decreased ship's engines to 27 revs. per min.
1.0	64·675 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=637·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=716·533 N.M.

HOUR. P.M	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	TUESDAY, MAY 16TH, 1893—*contd.*
	Depth=1750 fms. Drum=32½ revs. per min.=5·72 KTS. Ship's engines=26 revs. per min. Weight on brake levers=568 lbs. Dynamometer=6½ to 7½ cwt. Strophometer=28 to 31 revs. NOTE.—According to the lead of the cable ship is now passing through a strong current setting to the eastward.
1.30	67·553 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=639·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=719·411 N.M. Depth=1750 fms. Drum=32½ revs. per min.=5·72 KTS. Ship's engines=28½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=6½ to 7½ cwt. Strophometer=31 to 32 revs. Increased ship's engines to 28 revs. per min.
2.0	70·522 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=641·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=722·380 N.M. Depth=1750 fms. Drum=33½ revs. per min.=5·85 KTS. Ship's engines=27 revs. per min. Weight on brake levers=568 lbs. Dynamometer=6½ to 7½ cwt. Strophometer=30 to 33 revs.
2.30	73·394 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=643·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=725·252 N.M. Depth=1750 fms. Drum=32½ revs. per min.=5·72 KTS. Ship's engines=28 revs. per min. Weight on brake levers=568 lbs. Dynamometer=6½ to 7½ cwt. Strophometer=31 revs.
2.47	Increased ship's engines to 29 revs. per min.
3.0	76·454 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=645·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=728·312 N.M.

Hour. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	TUESDAY, MAY 16TH, 1893—*contd.*
	Depth=1750 fms. Drum=34½ revs. per min.=6·1 KTS. Ship's engines=30 revs. per min. Weight on brake levers=568 lbs. Dynamometer=6½ to 7½ cwt. Strophometer=32 revs.
3.30	79·703 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=648·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=731·561 N.M. Depth=1750 fms. Drum=37 revs. per min.=6·51 KTS. Ship's engines=31 revs. per min. Weight on brake levers=568 lbs. Dynamometer=6½ to 7½ cwt. Strophometer=32 to 35 revs.
4.0	Light SSW wind. Fine, but cloudy. Slight SSW sea and swell. Bar. 30·000 (75° F.). Temp. 74°·5 F. dry, 72° F. wet. Sea surface 76° F. 82·763 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=650·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=734·621 N.M. Depth=1750 fms. Drum=34½ revs. per min.=6·1 KTS. Ship's engines=27 revs. per min. Weight on brake levers=568 lbs. Dynamometer=6½ to 7½ cwt. Strophometer=28 to 31 revs.
4.30	85·641 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=653·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=737·499 N.M. Depth=1750 fms. Drum=32½ revs. per min.=5·7 KTS. Ship's engines=28 revs. per min. Weight on brake levers=568 lbs. Dynamometer=9½ cwt. Strophometer=29 revs. Decreased weight on brake levers to 497 lbs. At 2 p.m. commenced pumping the water out of main tank as required, keeping it well below the running flake of cable.
5.0	88·669 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=655·3 N.M.

Hour. P.M.	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*
	TUESDAY, MAY 16TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 740·527 N.M. Depth=1800 fms. Drum=34 revs. per min.=5·9 KTS. Ship's engines=29½ revs. per min. Weight on brake levers=497 lbs. Dynamometer=9½ cwt. Strophometer=31 revs.
5.30	91·505 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=657·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 743·363 N.M. Depth=1800 fms. Drum=32 revs. per min.=5·6 KTS. Ship's engines=29 revs. per min. Weight on brake levers=497 lbs. Dynamometer=9½ cwt. Strophometer=29 revs.
6.0	94·257 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=660·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 746·115 N.M. Depth=1800 fms. Drum=31 revs. per min.=5·45 KTS. Ship's engines=29 revs. per min. Weight on brake levers=497 lbs. Dynamometer=9½ cwt. Strophometer=28 revs. Temp. in fore cable tank, bottom of cone=81° F.
6.30	96·840 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=662·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 748·698 N.M. Depth=1800 fms. Drum=29 revs. per min.=5·1 KTS. Ship's engines=29 revs. per min. Weight on brake levers=497 lbs. Dynamometer=9½ cwt. Strophometer=28 revs.
6.35	97·317 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=663·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 749·175 N.M. Depth=1800 fms.

HOUR. P.M.	
	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*
	TUESDAY, MAY 16TH, 1893—*contd.*
	Approximate position by stars { Lat. 1° 1′·6 N. Long. 82° 30′·5 W. Current observed since noon=S 64° E, 4·9 N.M.=0·74 KT.
7.0	99·606 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=664·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=751·464 N.M. Depth=1800 fms. Drum=31½ revs. per min.=5·4 KTS. Ship's engines=32½ revs. per min. Weight on brake levers=497 lbs. Dynamometer=9½ cwt. Strophometer=33 revs. Increased ship's engines to 32 revs. per min.
7.30	102·735 N.M. of Light Deep Sea, No 1235, Sec. "7," paid out from main tank. Patent log=667·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=754·593 N.M. Depth=1800 fms. Drum=35½ revs. per min.=6·2 KTS. Ship's engines=32 revs. per min. Weight on brake levers=497 lbs. Dynamometer=9½ cwt. Strophometer=32 revs.
8.0	Moderate SSW breeze. Fine, bright, and clear. Slight S'ly swell, occasionally heavy. Bar. 30·050 (74° F.). Temp. 74° F. dry, 72° F. wet. Sea surface 75°·2 F. 105·833 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=670·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=757·691 N.M. Depth=1800 fms. Drum=35 revs. per min.=6·1 KTS. Ship's engines=32 revs. per min. Weight on brake levers=497 lbs. Dynamometer=9½ cwt. Strophometer=31 revs.
8.5	Increased weight on brake levers to 568 lbs.
8.30	108·926 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=673·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=760·784 N.M.

S.S. "SILVERTOWN."

Hour. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	TUESDAY, MAY 16TH, 1893—*contd.*
	Depth=1800 fms. Drum=35 revs. per min.=6·16 KTS. Ship's engines=32 revs. per min. Weight on brake levers=568 lbs. Dynamometer=8 to 9½ cwt. Strophometer=30 revs.
9.0	111·915 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=675·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=763·773 N.M. Depth=1800 fms. Drum =34 revs. per min.=5·98 KTS. Ship's engines=32½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=8 to 9½ cwt. Strophometer=30 revs.
9.30	114·793 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=678·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=766·651 N.M. Depth=1800 fms. Drum=32½ revs. per min.=5·72 KTS. Ship's engines=32 revs. per min. Weight on brake levers=568 lbs. Dynamometer=8 to 9½ cwt. Strophometer=30 revs.
9.45	Decreased ship's engines to 31 revs. per min.
10.0	117·698 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=681·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=769·556 N.M. Depth=1800 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=31 revs. per min. Weight on brake levers=568 lbs. Dynamometer=7 to 9 cwt. Strophometer=30 revs.
10.10	Decreased ship's engines to 30 revs. per min.
10.30	120·411 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=684·1 N.M.

HOUR.
P.M.

Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*

TUESDAY, MAY 16TH, 1893—*contd.*

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 772·269 N.M.

Depth=1800 fms.

Drum=$30\frac{1}{2}$ revs. per min.=5·37 KTS. Ship's engines=30 revs. per min. Weight on brake levers=568 lbs. Dynamometer=7 to $9\frac{1}{2}$ cwt. Strophometer=28 revs.

11.0 123·071 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=686·6 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 774·929 N.M.

Depth=1800 fms.

Drum=30 revs. per min.=5·28 KTS. Ship's engines=30 revs. per min. Weight on brake levers=568 lbs. Dynamometer=7 to $9\frac{1}{2}$ cwt. Strophometer=27 revs.

11.10 Increased ship's engines to 32 revs. per min.

11.30 125·996 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=689·0 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE =777·854 N.M.

Depth=1800 fms.

Drum=33 revs. per min.=5·81 KTS. Ship's engines=$32\frac{1}{2}$ revs. per min. Weight on brake levers=568 lbs. Dynamometer=$8\frac{1}{2}$ to $9\frac{1}{2}$ cwt. Strophometer=31 revs.

MIDNT. Moderate SSW breeze. Fine, bright, and clear. Slight SSW sea.

Bar. 30·050 (74° F.). Temp. 74° F. dry, 71°·2 F. wet. Sea surface 75° F.

129·168 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=691·9 N.M.

TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 781·026 N.M.

Depth=1800 fms.

Drum=36 revs. per min.=6·34 KTS. Ship's engines=33 revs. per min. Weight on brake levers=568 lbs. Dynamometer=8 to $9\frac{1}{2}$ cwt. Strophometer=33 revs.

S.S. "SILVERTOWN."

Hour. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	WEDNESDAY, MAY 17TH, 1893.
0.30	132·443 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=694·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=784·301 N.M. Depth=1800 fms. Drum=37 revs. per min.=6·51 KTS. Ship's engines=33 revs. per min. Weight on brake levers=568 lbs. Dynamometer=8 to 9½ cwt. Strophometer=33 revs.
1.0	135·695 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=697·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=787·553 N.M. Depth=1800 fms. Drum=37 revs. per min.=6·51 KTS. Ship's engines=32 revs. per min. Weight on brake levers=568 lbs. Dynamometer=9½ cwt. Strophometer=32 revs.
1.30	138·899 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=700·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=790·757 N.M. Depth=1800 fms. Drum=36 revs. per min.=6·33 KTS. Ship's engines=33 revs. per min. Weight on brake levers=568 lbs. Dynamometer=9 to 9½ cwt. Strophometer=32½ revs.
2.0	142·060 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=703·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=793·918 N.M. Depth=1800 fms. Drum=36 revs. per min.=6·3 KTS. Ship's engines=33 revs. per min. Weight on break levers=568 lbs. Dynamometers=9½ cwt. Strophometer=32 revs.
2.30	145·270 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=706·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=797·128 N.M. Depth=1800 fms.

Hour. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	WEDNESDAY, MAY 17TH, 1893—*contd.*
	Drum=36 revs. per min.=6·33 KTS. Ship's engines=33 revs. per min. Weight on brake levers=568 lbs. Dynamometer=8½ to 9½ cwt. Strophometer=32½ revs.
3.0	148·533 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=709·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=800·391 N.M. Depth=1800 fms. Drum=37 revs. per min.=6·51 KTS. Ship's engines=33 revs. per min. Weight on brake levers=568 lbs. Dynamometer=8½ to 9½ cwt. Strophometer=33½ revs.
3.30	151·873 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=711·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=803·731 N.M. Depth=1800 fms. Drum=38 revs. per min.=6·67 KTS. Ship's engines=33 revs. per min. Weight on brake levers=568 lbs. Dynamometer=8½ to 9½ cwt. Strophometer=31 to 34 revs. Decreased ship's engines to 31 revs. per min.
3.48	Decreased ship's engines to 30 revs. per min.
4.0	Light SSW wind. Fine, bright, and clear. Slight SSW sea and swell. Bar. 29·990 (74° F.). Temp. 73°·8 F. dry, 70° F. wet. Sea surface 75° F. 155·051 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=714·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=806·909 N.M. Depth=1800 fms. Drum=36 revs. per min.=6·33 KTS. Ship's engines=30 revs. per min. Weight on brake levers=568 lbs. Dynamometer=8½ to 9½ cwt. Strophometer=31½ revs.
4.13	Increased weight on brake levers to 636 lbs.
4.30	158·141 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=716·9 N.M.

HOUR. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	WEDNESDAY, MAY 17TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=809·999 N.M. Depth=1700 fms. Drum=35 revs. per min.=6·1 KTS. Ship's engines=32 revs. per min. Weight on brake levers=636 lbs. Dynamometer=9½ cwt. Strophometer=32 revs.
4.39	Increased weight on brake levers to 707 lbs.
5.0	161·219 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=719·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=813·077 N.M. Depth=1650 fms. Drum=35 revs. per min.=6·1 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=707 lbs. Dynamometer=9½ cwt. Strophometer=32 revs.
5.30	164·291 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=722·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=816·149 N.M. Depth=1600 fms. Drum=35 revs. per min.=6·1 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=707 lbs. Dynamometer=9½ cwt. Strophometer=30 revs.
5.58	Decreased weight on brake levers to 636 lbs.
6.0	167·292 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=724·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=819·150 N.M. Depth=1600 fms. Drum=34 revs. per min.=5·98 KTS. Ship's engines=30 revs. per min. Weight on brake levers=636 lbs. Dynamometer=9½ cwt. Strophometer=28 revs.
6.20	Decreased weight on brake levers to 568 lbs., and reduced strain to 9 cwt.

Hour. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	WEDNESDAY, MAY 17TH, 1893—*contd.*
6.30	170·199 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=727·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=822·057 N.M. Depth=1400 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=30 revs. per min. Weight on brake levers=568 lbs. Dynamometer=8 cwt. Strophometer=28 revs.
6.33	Decreased weight on brake levers to 355 lbs. Sky overcast, observations impracticable.
6.37	Increased weight on brake levers to 426 lbs.
6.48	Increased ship's engines to 31 revs. per min.
7.0	173·083 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=729·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=824·941 N.M. Depth=1200 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=31½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=6½ cwt. Strophometer=30 revs. Lifted brakes right up.
7.30	176·017 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=732·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=827·875 N.M. Depth=1000 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=30½ revs. per min. Weight on brake levers=426 lbs. Dynamometer=5½ cwt. Strophometer=30 revs.
8.0	Moderate SSW breeze. Fine, but very cloudy. Calm sea, with slight S'ly swell. Bar. 30·050 (73° F.). Temp. 73° F. dry, 70°·2 F. wet. Sea surface 74°·5 F. 179·027 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=735·1 N.M.

Hour. A.M.	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*
	WEDNESDAY, MAY 17TH, 1893—*contd.*
	TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=830·885 N.M. Depth=900 fms. Drum=34 revs. per min.=5·98 KTS. Ship's engines=31 revs. per min. Weight on brake levers=426 lbs. Dynamometer=5½ cwt. Strophometer=31 revs. Temp. in fore cable tank, bottom of cone=79° F.
8.6	Increased weight on brake levers to 568 lbs., and decreased ship's engines to 30 revs. per min.
8.30	181·958 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=737·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=833·816 N.M. Depth=800 fms. Drum=33 revs. per min.=5·8 KTS. Ship's engines=30 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5½ cwt. Strophometer=30 revs.
9.0	184·824 N.M. of Light Deep Sea. No. 1235, Sec. "7," paid out from main tank. Patent log=740·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=836·682 N.M. Depth=800 fms. Drum=32½ revs. per min.=5·7 KTS. Ship's engines=30 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5½ cwt. Strophometer=29 revs.
9.30	187·767 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=743·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=839·625 N.M. Depth=800 fms. Drum=33½ revs. per min.=5·9 KTS. Ship's engines=29½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=5½ cwt. Strophometer=30 revs.
10.0	190·594 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=745·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=842·452 N.M.

S.S. "SILVERTOWN."

Hour. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.***
	WEDNESDAY, MAY 17TH, 1893—*contd.*
	Depth=800 fms. Drum=32 revs. per min.=5·63 KTS. Ship's engines=30 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5 to 5½ cwt. Strophometer=29 revs.
10.30	193·522 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=748·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=845·380 N.M. Depth=800 fms. Drum=33 revs. per min.=5·81 KTS. Ship's engines=31 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5 to 5¾ cwt. Strophometer= 29 revs.
11.0	196·418 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=751·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=848·276 N.M. Depth=800 fms. Drum=33 revs. per min.=5·81 KTS. Ship's engines=30 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5 to 5¾ cwt. Strophometer=29½ revs.
11.30	199·278 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=753·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=851·136 N.M. Depth=800 fms. Drum=32½ revs. per min.=5·72 KTS. Ship's engines=31 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5 to 5½ cwt. Strophometer=29 revs.
11.51	(Noon by observations.) 201·253 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=755·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=853·111 N.M. Depth=1000 fms. CABLE, BY INDICATOR, PAID OUT SINCE OBSERVED NOON YESTERDAY=143·493 N.M.

Hour. A.M.	
	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*
	WEDNESDAY, MAY 17TH, 1893—*contd.*
	DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=121·800 N.M. SLACK=17·8°/o. Position { Lat. 0° 26′·9 S. Long. 82° 23′·6 W. } Current observed since 6.35 p.m. yesterday=N 72° W, 8·6 N.M.=0·5 KT. NOTE.—Since the position determined by stars at 6.35 p.m. yesterday experienced a strong set to the westward, and noon observations to-day place ship several miles to the westward of the position steered for.
NOON.	(Engineer's time.) Light SSW wind. Fine, but cloudy. Slight sea from SSW. Bar. 30·040 (74° F.). Temp. 73°·4 F. dry, 71° F. wet. Sea surface 76°·8 F. 202·074 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=756·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=853·932 N.M. Depth=1000 fms. Drum=32 revs. per min.=5·63 KTS. Ship's engines=31 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5 to $5\frac{1}{2}$ cwt. Strophometer=28 revs. Temp. in fore cable tank, bottom of cone=$79\frac{1}{2}$° F. Brakes up throughout the watch.
P.M. 0.10	Increased ship's engines to 36 revs. per min.
0.30	205·054 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=759·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=856·912 N.M. Depth=1000 fms. Drum=$33\frac{1}{2}$ revs. per min.=5·88 KTS. Ship's engines=$36\frac{1}{2}$ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=32 revs. CHANGED COURSE TO S 37° E. COURSE MADE GOOD SINCE NOON YESTERDAY=S 7° E. CABLE, BY INDICATOR, PAID OUT SINCE OBSERVED NOON YESTERDAY=147·294 N.M.

HOUR. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	WEDNESDAY, MAY 17TH, 1893—*contd.*
	DISTANCE, BY CHART, OVERGROUND, SINCE OBSERVED NOON YESTERDAY=125·100 N.M. SLACK=17·7%. Position { Lat. 0° 30′·1 S. / Long. 82° 23′·1 W.
1.0	208·291 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=762·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=860·149 N.M. Depth=1100 fms. Drum=36½ revs. per min.=6·42 KTS. Ship's engines=36 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=31 to 34 revs.
1.4	Increased ship's engines to 38 revs. per min.
1.30	211·716 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=766·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=863·574 N.M. Depth=1100 fms. Drum=39 revs. per min.=6·86 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=35 revs.
2.0	215·333 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=769·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=867·191 N.M. Depth=1100 fms. Drum=41 revs. per min.=7·21 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=37 revs.
2.6	Decreased ship's engines to 36 revs. per min.
2.30	218·973 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=773·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=870·831 N.M. Depth=1100 fms.

Hour. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	WEDNESDAY, MAY 17TH, 1893—*contd.*
	Drum=41 revs. per min.=7·21 KTS. Ship's engines=36½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=35 revs.
2.37	Decreased ship's engines to 35 revs. per min.
3.0	222·236 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=776·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=874·094 N.M. Depth=1150 fms. Drum=37 revs. per min.=6·51 KTS. Ship's engines=35 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=31 revs.
3.30	225·508 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=779·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=877·366 N.M. Depth=1150 fms. Drum=37 revs. per min.=6·51 KTS. Ship's engines=35 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=31 to 35 revs.
3.40	Increased ship's engines to 37 revs. per min.
4.0	Light SSW wind. Fine, but overcast and cloudy. Slight SSW sea and swell. Bar. 29·960 (73° F.). Temp. 73° F. dry, 70°·2 F. wet. Sea surface 76° F. 229·051 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=782·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=880·909 N.M. Depth=1100 fms. Drum=40 revs. per min=7·04 KTS. Ship's engines=37 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=35 revs. Brakes right up throughout the watch.

Hour. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	WEDNESDAY, MAY 17TH, 1893—*contd.*
4.30	232·653 N.M. of Light Deep Sea, No. 1235, Sec. "7, paid out from main tank. Patent log=786·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 884·511 N.M. Depth=1050 fms. Drum=41 revs. per min.=7·2 KTS. Ship's engines=36½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=36 revs.
5.0	236·228 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=789·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 888·086 N.M. Depth=1050 fms. Drum=40½ revs. per min.=7·1 KTS. Ship's engines=37½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=34 revs.
5.30	239·777 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=793·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 891·635 N.M. Depth=1050 fms. Drum=40 revs. per min.=7·0 KTS. Ship's engines=37 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=36 revs.
6.0	243·470 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=796·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 895·328 N.M. Depth=1100 fms. Drum=42 revs. per min.=7·39 KTS. Ship's engines=37 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=37 revs. Temp. in fore cable tank, bottom of cone=78½° F.
6.30	247·140 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=800·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 898·998 N.M.

Hour. P.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	WEDNESDAY, MAY 17TH, 1893—*contd.*
	Depth=1100 fms. Drum=41½ revs. per min.=7·3 KTS. Ship's engines=37 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=36 revs.
7.0	250·782 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=803·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=902·640 N.M. Depth=1100 fms. Drum=41 revs. per min.=7·2 KTS. Ship's engines=37 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=37 revs. Decreased ship's engines to 36 revs. per min.
7.30	254·399 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=806·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=906·257 N.M. Depth=1100 fms. Drum=41 revs. per min.=7·2 KTS. Ship's engines=36½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=36 revs.
7.45	Decreased ship's engines to 35 revs. per min.
8.0	Moderate S'ly wind. Overcast and dull. Moderate S'ly sea. Bar. 30·030 (74° F.). Temp. 72° F. dry, 69°·5 F. wet. Sea surface 75° F. 257·836 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=809·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=909·694 N.M. Depth=1100 fms. Drum=39 revs. per min.=6·8 KTS. Ship's engines=35 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=33 revs. Brakes up throughout the watch.

S.S. "SILVERTOWN."

Hour. P.M.	Paying out from San Juan del Sur to Buoy on Santa Elena End —*contd.*
	WEDNESDAY, MAY 17TH, 1893—*contd.*
8.30	261·143 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=813·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=913·001 N.M. Depth=1100 fms. Drum=37½ revs. per min.=6·6 KTS. Ship's engines=35½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=31 to 34 revs. Increased ship's engines to 36 revs. per min.
9.0	264·630 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=816·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=916·488 N.M. Depth=1100 fms. Drum=39½ revs. per min.=6·95 KTS. Ship's engines=36½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=36 revs.
9.30	268·108 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=819·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=919·966 N.M. Depth=1100 fms. Drum=39½ revs. per min.=6·95 KTS. Ship's engines=36 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=34 revs.
10.0	271·589 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=822·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=923·447 N.M. Depth=1100 fms. Drum=39½ revs. per min.=6·95 KTS. Ship's engines=36 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=35 revs. NOTE.—Since 4 p.m. filled fore and main ballast tanks with water. All ballast tanks now full of water=900 tons weight.

Hour. P.M.	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*
	WEDNESDAY, MAY 17th, 1893—*contd.*
10.30	275·153 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=826·2 N.M. Total Cable laid from San Juan del Sur Office=927·011 N.M. Depth=1100 fms. Drum=40½ revs. per min.=7·13 kts. Ship's engines=36 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=34½ revs.
11.0	278·754 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=829·5 N.M. Total Cable laid from San Juan del Sur Office=930·612 N.M. Depth=1100 fms. Drum=40¾ revs. per min.=7·17 kts. Ship's engines=36½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=35 revs.
11.30	282·394 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=832·8 N.M. Total Cable laid from San Juan del Sur Office=934·252 N.M. Depth=1100 fms. Drum=41 revs. per min.=7·22 kts. Ship's engines=37 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=36 revs.
MIDNT.	Moderate S'ly wind. Fine, but cloudy. Slight sea from SSW. Bar. 30·040 (74° F.). Temp. 72° F. dry, 69° F. wet. Sea surface 74°·8 F. 285·990 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=836·2 N.M. Total Cable laid from San Juan del Sur Office=937·848 N.M. Depth=1100 fms. Drum 40¾ revs. per min.=7·17 kts. Ship's engines=37 revs. per min. Weight on brake levers=568 lbs. Dynamometer (nil). Strophometer=35½ revs.

HOUR. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	THURSDAY, MAY 18TH, 1893.
0.30	289·554 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=839·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 941·412 N.M. Depth=1250 fms. Drum=40 revs. per min.=7·04 KTS. Ship's engines=36 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=35 revs
1.0	293·147 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=842·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 945·005 N.M. Depth=1300 fms. Drum=40½ revs. per min.=7·15 KTS. Ship's engines=36 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=35 revs.
1.30	296·769 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=846·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 948·627 N.M. Depth=1300 fms. Drum=41 revs. per min.=7·21 KTS. Ship's engines=36 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=35 revs.
2.0	300·377 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=849·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 952·235 N.M. Depth=1500 fms. Drum=41 revs. per min.=7·21 KTS. Ship's engines=36½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=35½ revs.
2.30	303·999 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=852·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 955·857 N.M.

HOUR. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	THURSDAY, MAY 18TH, 1893—*contd.*
	Depth=1600 fms. Drum=41 revs. per min.=7·21 KTS. Ship's engines=36 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=34½ revs.
3.0	307·630 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=856·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=959·488 N.M. Depth=1700 fms. Drum=41 revs. per min.=7·21 KTS. Ship's engines=36 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=34 revs.
3.15	Owing to depth of water put strain on from 5 cwt. to 5½ cwt.
3.30	311·250 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=859·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=963·108 N.M. Depth=1700 fms. Drum=41 revs. per min.=7·21 KTS. Ship's engines=36 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5 to 5½ cwt. Strophometer=35 revs.
3.32	Owing to not having sighted Santa Elena Light, increased ship's engines to 38 revs. per min.
4.0	Moderate S'ly wind. Overcast and cloudy. Slight SSW sea and swell. Bar. 30·000 (73° F.). Temp. 71° F. dry, 68° F. wet. Sea surface 73° F. 315·036 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=863·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=966·894 N.M. Depth=1500 fms. Drum=43 revs. per min.=7·56 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=5 to 5½ cwt. Strophometer=37½ revs.

S.S. "SILVERTOWN."

HOUR. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	THURSDAY, MAY 18TH, 1893—*contd.*
4.30	318·829 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=867 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=970·687 N.M. Depth=1600 fms. Drum=43 revs. per min.=7·5 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=37 revs.
5.0	322·643 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=870·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=974·501 N.M. Depth=1600 fms. Drum=43 revs. per min.=7·5 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=37 revs.
5.30	326·466 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=874·5 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=978·324 N.M. Depth=1800 fms. Drum=43 revs. per min.=7·5 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=37 revs.
6.0	330·288 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=878·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=982·146 N.M. Depth=1800 fms. Drum=43½ revs. per min.=7·65 KTS. Ship's engines=38½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=38 revs.
6.30	334·249 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=881·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=986·107 N.M. Depth=2000 fms.

Hour. A.M.	
	Paying out from San Juan del Sur to Buoy on Santa Elena End—*contd.*
	THURSDAY, MAY 18TH, 1893—*contd.*
	Drum=45 revs. per min.=7·92 KTS. Ship's engines=38½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=38 revs. CHANGED COURSE TO S 76° E. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE S 37° E (MADE GOOD S 29½° E)=129·195 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE S 37° E (MADE GOOD S 29½° E)=111·250 N.M. SLACK=16·1°/ₒ. Position { Lat. 2° 7′·0 S. Long. 81° 28′·5 W. Current observed since noon yesterday=S 87° W, 21 N.M.=1·14 KTS.
6.40	Ran water into tank under paying-out machine.
6.50	Land in sight from aloft.
7.0	338·351 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=885·9 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=990·209 N.M. Depth=2000 fms. Drum=46½ revs. per min.=8·18 KTS. Ship's engines=38 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=40 revs.
7.5	Increased ship's engines to 40 revs. per min.
7.15	Sighted Santa Elena Point bearing S 83° E.
7.19	340·923 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=888·7 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=992·781 N.M. Depth=1000 fms. CHANGED COURSE TO N 57° E. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE S 76° E (MADE GOOD S 78° E)=6·674 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE S 76° E (MADE GOOD S 78° E)=6·000 N.M.

HOUR. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	THURSDAY, MAY 18TH, 1893—*contd.*
	SLACK=11·2°/₀.
	Position { Lat. 2° 8′·2 S. / Long. 81° 22′·6 W. } Santa Elena Point bearing S 81° E.
7.30	342·541 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=890·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 994·399 N.M. Depth=500 fms. Drum=$47\frac{1}{2}$ revs. per min.=8·36 KTS. Ship's engines=40 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=43 revs.
7.56	346·581 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=893·6 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 998·439 N.M. Depth=670 fms. CHANGED COURSE TO N. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 57° E (MADE GOOD N $62\frac{1}{2}$° E)=5·658 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 57° E (MADE GOOD N $62\frac{1}{2}$° E)=5·100 N.M. SLACK=10·9°/₀. Position { Lat. 2° 5′·8 S. / Long. 81° 18′·1 W. } Santa Elena Point bearing S 72° E.
8.0	Light SW breeze. Fine, but overcast and hazy. Smooth sea, slight S'ly swell. Bar. 30·075 (73° F.). Temp. 71°·5 F. dry, 68°·8 F. wet. Sea surface 73° F. 347·099 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=893·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 998·957 N.M. Depth=500 fms. Drum=$51\frac{1}{2}$ revs. per min.=9·06 KTS. Ship's engines=40 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(lifting). Strophometer=44 revs. Temp. in fore cable tank, bottom of cone=78° F.

HOUR. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	THURSDAY, MAY 18TH, 1893—*contd.*
8.30	351·869 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=898·1 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 1003·727 N.M. Depth=600 fms. Drum=54 revs. per min.=9·5 KTS. Ship's engines=40 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=48 revs.
8.34	352·546 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=898·8 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 1004·404 N.M. Depth=500 fms. CHANGED COURSE TO N 76° E. CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N (MADE GOOD N)=5·965 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N (MADE GOOD N)=5·400 N.M. SLACK=10·5%. Position { Lat. 2° 0′·4 S. Long. 81° 18′·1 W. } Santa Elena Point bearing S 56½° E.
9.0	356·312 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=902·0 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 1008·170 N.M. Depth=500 fms. Drum=50½ revs. per min.=8·89 KTS. Ship's engines=40 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=41 revs. Brakes right up throughout the morning.
9.18	Sighted Buoy 42R on Santa Elena End bearing S 81° E.
9.20	359·152 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=905·2 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE= 1011·010 N.M.

S.S. "SILVERTOWN."

HOUR. A.M.	**Paying out from San Juan del Sur to Buoy on Santa Elena End**—*contd.*
	THURSDAY, MAY 18TH, 1893—*contd.*
	Depth=300 fms. CHANGED COURSE TO S 81° E CABLE, BY INDICATOR, PAID OUT ON LAST COURSE, N 76° E (MADE GOOD N 76° E)=6·606 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, N 76° E (MADE GOOD N 76° E)=6·000 N.M. SLACK=10·1°/ₒ. Position { Lat. 1° 59′·0 S, Long. 81° 12′·3 W } Santa Elena Lighthouse bearing S 40° E.
9.30	360·514 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=906·3 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=1012·372 N.M. Depth=250 fms. Drum=47½ revs. per min.=8·36 KTS. Ship's engines=40 revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=41 revs.
10.0	364·531 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank. Patent log=910·4 N.M. TOTAL CABLE LAID FROM SAN JUAN DEL SUR OFFICE=1016·389 N.M. Depth=200 fms. Drum=45½ revs. per min.=8·01 KTS. Ship's engines=40½ revs. per min. Weight on brake levers=568 lbs. Dynamometer=(nil). Strophometer=40 revs. Bearings:—Santa Elena Lighthouse S 32° E. Mark buoy 61, blue flag, S 50° E.
10.10	Ship's engines=38 revs. per min.
10.14	Ship's engines=36 revs. per min. Increased weight on brake levers to 1125 lbs. (16 weights).
10.15	Approaching buoy 42R (with cage) on Santa Elena End, Stopped ship's engines.
10.20	Moving engines as required to bring ship up to buoy.

HOUR. A.M.	
	Up to Buoy on Santa Elena End.
	THURSDAY, MAY 18TH, 1893—*contd.*
10.32	Lowered starboard surf-boat. NOTE.—This surf-boat, which was damaged at Salina Cruz on the 1st instant, has been repaired by ship's carpenter. Cable running out slowly to strain=5 to 7 cwt.
10.42	Ship up to buoy. Sent surf-boat away to dismantle buoy. Patent log=914·8 N.M.
10.48	Passed rope from port picking-up drum to boat at buoy.
10.50	Drum-rope shackled on to moorings of buoy, commenced to heave in on moorings with port picking-up drum. Put engine of paying-out machine in gear, and commenced paying out on San Juan del Sur End (Light Deep Sea from main tank) over stern sheave as required.
10.51	Slipped buoy 42 from moorings.
10.55	Buoy 42 hoisted on board.
10.56	Factory mile mark No. 368, in Light Deep Sea, No. 1235, Sec. "7," from main tank passed off drum. Light Deep Sea, No. 1235, Sec. "7," paid out by paying-out drum measurement .. .. = 367·600 N.M. Length by Factory measurement = 368·000 Splice with Sec. "5".. = 0·014 Dry End .. .. = 0·007 0·021 367·979 } = 367·979 Difference .. .. = 0·379 TOTAL CABLE, BY FACTORY MEASUREMENT, LAID FROM SAN JUAN DEL SUR OFFICE=1019·837 N.M.
	At Santa Elena End—Completing Section.
10.57	Paying out on San Juan del Sur End over stern sheave as required, to keep it free of strain.

Hour. A.M.	**At Santa Elena End—Completing Section—*contd.***
	THURSDAY, MAY 18TH, 1893—*contd.*
11.4	Hoisted up starboard surf-boat.
11.8	Santa Elena End (Light Intermediate type, ex S.S. "Relay," laid on the 16th April last) came inboard, and on to port picking-up drum.
11.10	Stopped picking up on Santa Elena End and bent on stoppers.
11.15	Turns of Santa Elena End taken off drum. Cut 30 fms. for kink and damaged sheathing off Santa Elena End, and attached lead from testing-room.
11.18	Picking up and paying out on San Juan del Sur End as required. No strain on cable.
11.31	Spoke Santa Elena.
11.43	Bent starboard quarter line and slip rope on San Juan del Sur End on stern baulks, and let the ropes take weight of cable.
11.50	Tests on Santa Elena End satisfactory. Paid down on quarter deck 100 fms. of the Light Deep Sea cable, from main tank, on San Juan del Sur End, for passing end of cable round starboard side of ship, from stern to bows. Cut cable. 0·200 N.M. of Light Deep Sea, No. 1235, Sec. "7," paid out from main tank since Factory mile mark No. 368 passed out at 10.56 a.m. on San Juan del Sur End. Light Deep Sea, No. 1235, Sec. "7," paid out by Factory measurement .. .. = 368 179 N.M Surplus on end = 0·030, Final splice .. = 0·007 } = 0·037 ,, 368·142 N.M.

HOUR. A.M.	
	At Santa Elena End—Completing Section—*contd.*
	THURSDAY, MAY 18TH, 1893—*contd.*
	TOTAL CABLE LAID, BY FACTORY MEASUREMENT, FROM SAN JUAN DEL SUR OFFICE=1020·0 N.M. 47·421 N.M. of Light Deep Sea, No. 1235, Sec. "7," now left in main tank. CABLE, BY INDICATOR, CORRECTED, PAID OUT ON LAST COURSE, S 81° E (MADE GOOD S 65½° E)=8·990 N.M. DISTANCE, BY CHART, OVERGROUND, ON LAST COURSE, S 81° E (MADE GOOD S 65½° E)=8·000 N.M. SLACK=12·4°/o.
11.51	Commenced passing San Juan del Sur End round starboard side of ship, from stern sheave to starboard bow sheave.
11.58	San Juan del Sur End brought inboard over starboard bow sheave and run along upper deck.
NOON.	Light SW winds. Fine, but overcast. Slight sea from SW. Bar. 30·050 (73° F.). Temp. 71°·5 F. dry, 69°·5 F. wet. Sea surface 75° F.
P.M. 0.3	Bent stoppers on San Juan del Sur End on bow baulks, and lead from testing room attached.
0.5	Let go bight of San Juan del Sur End from stern sheave.
0.11	Bent on rounding and re-bent stoppers on San Juan del Sur End on starboard bow sheave.
0.13	Shifted Santa Elena End from port bow sheave to starboard bow sheave and rebent on stoppers.
0.18	Cut another 12 fms. (surplus cable) off Santa Elena End (making 42 fms.=0·041 N.M. in all) and commenced to open it out for splice with San Juan del Sur End. 3·935 N.M. minus 0·041=3·894 N.M. of Light Intermediate Cable, ex S.S. "Relay," now remaining on Santa Elena End.

HOUR. P.M.

At Santa Elena End—Completing Section—*contd.*

THURSDAY, MAY 18TH, 1893—*contd.*

Total length of cable laid from Santa Elena Hut to this (final) splice=

Shore-End,	No. 1953B,	pt. Sec.	"3B"	=7·000 N.M.
Heavy Int.,	" 1952,	" "	"3"	=1·990 "
Light "	" 1951,	" "	"2"	=0·978 "
" "	ex. S.S. "Relay,"		..	=3·894 "
	Total ..		..	=13·862 N.M.

0.25 Tests on San Juan del Sur End satisfactory.

0.28 Cut 30 fms. (for surplus cable) off San Juan del Sur End and commenced to open out for splice with Santa Elena End. 8 fms. on the San Juan del Sur End expended for this final splice, making in all 38 fms.=0·037 N.M.

0.38 Commenced joint between San Juan del Sur End (Light Deep Sea type), and Santa Elena End (Light Intermediate type).

0.58 Sounded in 100 fms.

1.20 Ship lying broadside on to the wind at times, against the helm. Bent a slip rope on to San Juan del Sur End, in case a strain should come on the cable, and make it necessary to veer away.

1.30 Joint between San Juan del Sur and Santa Elena Ends finished and passed. Commenced final splice.

2.2 Final splice completed. Set about slipping the bight of cable.

Completing Section—Final Bight.

2.11 Final splice of the San Juan del Sur—Santa Elena Section slipped successfully.

Position of final splice { Lat. 2° 2′·8 S. Long. 81° 3′·3 W. } { Santa Elena Lighthouse bearing S 27½° E. Mark buoy 61 (blue flag) bearing S 6½° W. White Spot bearing S 50° E. }

HOUR. P.M.	
	Summary of Lengths.
	THURSDAY, MAY 18TH, 1893—*contd.*
	SUMMARY OF CABLE IN THE SAN JUAN DEL SUR—SANTA ELENA SECTION:—

SAN JUAN DEL SUR—

Shore-End,	No. 1953B,	pt. Sec. "3B" =	3·432 N.M.		Piece "D" from main tank. Laid 12th to 18th May, 1893.
Heavy Int.	" 1952A,	" "3A" =	4·990	"	
Light "	" 1951	" "2" =	21·986	"	
Light Deep Sea	" 1235	" "10" =	205·383	"	
" " "	" "	Sec. "5" =	416·067	"	
" " "	" "	pt. Sec. "7" =	368·142	"	
Light Int.	Ex "Relay"	" "2A" =	3·894	"	Laid 16th April, 1893
" "	No. 1951	" "2" =	0·978	"	Piece "C" from main tank. Laid 1st April, 1893.
Heavy Int.	" 1952	" "3" =	1·990	"	
Shore-End	" 1953B	" "3B" =	7·000	"	

SANTA ELENA—

Total .. .. 1033·862 N.M.

2.15 Set on full speed for anchorage off Santa Elena Cable Hut.

3.45 Temperature in main cable tank=$79\frac{1}{2}°$ F.

AT SANTA ELENA.

S.S. "SILVERTOWN."

MAY 18TH TO MAY 20TH, 1893.

S.S. "SILVERTOWN."

Hour. P.M.	THURSDAY, MAY 18TH, 1893—*contd.*
4.0	Let go port anchor in 6¾ fms. of water off Santa Elena; veered chain to 45 fms. Position of ship { Cable House and Lighthouse 36° 40′. / " " Rocky Point 38° 40′. / " " Jacinto " 84° 10′. Draught of ship { Forward 16′ 0″. / Aft 21′ 10″.
4.13	Mr. J. Rymer-Jones left in gig for Cable Hut, to get Mr Schneider's (at San Juan del Sur) results of tests on the completed San Juan del Sur—Santa Elena Section, and to wire Silvergray, London, and New York, of the completion of the cables, if the tests are "O.K."
6.45	Mr. Rymer-Jones reports that on reaching Cable Hut he found that Mr. Schneider had instructed Santa Elena to free end of cable for 3 hours, which time would not elapse before 7 p.m.; he therefore arranged with Mr. Ripley, Manager of the Station, to signal results and tests with hand-signal lamp to ship, and if tests are satisfactory to forward telegram to Silvergray, London.
6.47	Captain of the Port and other officials came on board.
7.0	Hoisted up gig.
8.0	Light S'ly breeze. Fine, but overcast and hazy. Bar. 30·050 71°·5 (F.). Temp. 71°·1 F. dry, 68°·8 F. wet. Sea surface 75°·5 F.
8.30	Shore signalled, "S.G. Schneider to Rymer-Jones. D.R. total zinc fourteen point two megs. Fifth thirty point six, both currents agree. Storm. Earth till morning." Replied, "O.K., send telegram." Shore signalled, "Telegram gone forward O.K." Similar weather as at 8.0 p.m.
MIDNT.	

HOUR	FRIDAY, MAY 19TH, 1893.
A.M.	
8.0	Light S'ly breeze. Fine, but overcast. Bar. 30·080 (72° F.). Temp. 71°·5 F. dry, 68°·5 F. wet. Sea surface 73°·3 F.
9.15	Messrs. J. Rymer-Jones, H. Kingsford, and J. F. Coote, with Jointer Gowing, and Messrs. Bremner and Bogardus (of the C. & S. A. Tel. Co.) left for shore, to test the San Juan del Sur—Santa Elena Section.
10.55	Mr. Stannage, of the C. & S. A. Tel. Co., came on board with a telegram to Capt. Hunter from Mr. Schneider, confirming the results of tests signalled from shore last evening.
NOON.	Light S'ly breeze. Fine, but overcast. Bar. 30·050 (74° F.). Temp. 74°·8 F. dry, 70° F. wet. Sea surface 75°·2 F.
P.M.	
1.55	Shore signalled, "Message for Capt. Hunter." Replied, "O.K."
2.15	Mr. Cazalet and Dr. Toms, with Mr. Stannage, left in gig for Cable Hut.
2.18	Tested the buoyancy of Buoy No. 62, and found that 40 fms. of $\frac{1}{2}''$ chain was as much as the buoy could float with. 30 fms. of $\frac{1}{2}''$ chain is the calculated load for buoy.
2.37	Surf-boat left to pick up mark buoy (torpedo buoy No. 80 with blue flag) which was let go at 5.13 p.m., on 1st April, to mark route of Northern Shore-End laid that day.
3.5	Surf-boat returned with mark buoy and moorings, viz., 15 fms. $\frac{1}{4}''$ chain, and two 50-lb. sinkers.
3.15	Hoisted up surf-boat.
4.0	Gig returned from shore with congratulatory telegram from Silvergray, London, to Capt. Hunter on the completion of the cables, and bringing on board several visitors.
5.5	Mr. Mote left for shore in gig, taking a note to Mr. Kingsford from Capt. Hunter *re* the C. & S. A. Tel. Co. using the completed sections of cable for traffic during the ten days' guarantee.

Hour. P.M.	FRIDAY, MAY 19TH, 1893—*contd.*
8.0	Light SW wind. Fine, but cloudy. Bar. 30·080 (73° F.). Temp. 71°·2 F. dry, 69·5° F. wet. Sea surface 74°·8 F.
8.40	The tests taken by Mr. J. Rymer-Jones to-day on the San Juan del Sur—Santa Elena Section are highly satisfactory.
8.50	Hoisted gig and prepared for putting to sea.
	SATURDAY, MAY 20TH, 1893.
A.M. 4.10	Weighed anchor and set on to pick up Mark Buoy No. 61, blue flag, put down at 4.5 p.m. March 31st.
6.30	Buoy No. 61, and moorings on board. Set on for position to take four soundings along route of the Santa Elena—Chorrillos Section (at Mr. Kingsford's request) *en route* to Callao.
6.40	Joint in steam pipe of main engines gave way; stopped ship. Lighthouse bearing S $38\frac{1}{2}$° E, 9 N.M.
7.25	Set on at half speed for anchorage in Santa Elena Bay again, to effect repairs in engine room.
8.0	Light S'ly breeze. Fine and clear. Bar. 30·180 (75° F.). Temp. 75°·8 F. dry, 70° F. wet. Sea surface 73°·5 F.
9.35	Stopped ship and let go starboard anchor in 7 fms. of water; veered chain to 45 fms., off Santa Elena Cable Hut. Position { Cable Office bearing S 52° W. Rocky Point ,, S 20° W. Cable Office and Rocky Point 32° 40′.
10.20	Messrs. J. Rymer-Jones, Kingsford, and Howard left for Cable Office.
NOON.	Light S'ly breeze. Fine, bright, and clear. Bar. 30·130 (73° F.). Temp. 77°·2 F. dry, 68° F. wet Sea surface 75° F.

Hour. P.M.	SATURDAY, MAY 20TH, 1893—*contd.*
	Temp. in cable tanks: bottom of cone, fore tank 78½° F., main tank 78° F.
6.0	Temp. in cable tanks: bottom of cone, fore tank 78° F., main tank 78° F.
8.0	Light SSW wind. Fine, but slightly cloudy. Bar. 30·100 (74° F.). Temp. 71° F. dry, 69° F wet. Sea surface 73°·5 F.

STEAMING FROM SANTA ELENA TO CALLAO.

S.S. "SILVERTOWN."

MAY 21ST TO MAY 24TH, 1893.

STEAMING FROM SANTA ELENA TO CALLAO.

S.S. "SILVERTOWN."

HOUR. A.M.	SUNDAY, MAY 21ST, 1893.
4.0	Light S'ly breeze. Fine, but overcast
4.10	Weighed anchor and set on for Callao.
5.10	Santa Elena Lighthouse bearing S 24° E, 4 N.M. distant.
8.0	Fresh SW wind, fine, but cloudy. Bar. 30·100 (73° F.). Temp. 68°·8 F. dry, 67° F. wet. Sea surface 72°·5 F. Temp. in cable tanks: bottom of cone, fore tank 77½° F., main tank 77° F., after tank (empty).
9.15	Cable in fore and main tanks well flushed with water by hose.
10.7	Sounding 126 S { Lat. 2° 34′·4 S, Long. 81° 25′·7 W } 1776 fms. Lost 1020 fms. of wire and tube. NOTE.—Much difficulty was experienced in taking this sounding owing to ship being very light, and breeze blowing strong from SW. Captain Hunter informed Mr. Kingsford that unless the wind moderated considerably he could not take the soundings as arranged for.
NOON.	Strong SSW wind. Fine, but cloudy and hazy. Moderate sea and swell from the SW. Bar. 30·080 (75° F.). Temp. 68°·2 F. dry, 66°·5 wet. Sea surface 70° F. Temp. in cable tanks: bottom of cone, fore tank 77½° F, main tank 77½° F. Position by observations { Lat. 2° 42′·4 S., Long. 81° 28′·0 W. Current observed since 5.10 a.m.=N 60° W, 7·2 N.M.= 1·06 KTS.
P.M. 4.0	Fresh S'ly breeze. Fine and clear.

HOUR. P.M.	SUNDAY, MAY 21ST, 1893—*contd.*
6.0	Temp. in cable tanks, bottom of cone: fore tank 76½° F., main tank 76° F.
6.48	Position by stars { Lat. 5° 24′·3 S. Long. 81° 30′·5 W. Current observed since noon=N, 8·6 N.M.=1·25 KTS.
8.0	Strong head S'ly wind and sea. Fine, but cloudy. Bar. 30·080 (71° F.). Temp. 67° F. dry, 65° F. wet. Sea surface 67° F.
MIDNT.	Similar weather.
	MONDAY, MAY 22ND, 1893.
A.M. 2.0	Sighted Talara Light bearing S 36° E.
3.42	Talara Light abeam bearing E, 9 N.M. distant. No current observed since 6.48 p.m. yesterday.
4.0	Fresh S'ly wind. Fine, but cloudy. Moderate sea.
8.0	Fresh S'ly breeze. Fine and bright, but cloudy. Slight decreasing sea. Bar. 30·100 (67° F.). Temp. 64°·5 F. dry, 62° F. wet. Sea surface 64°·5 F. Saddle of Payta bearing S 80° E. Temp. in cable tanks: bottom of cone, fore tank 71½° F., main tank 71° F.
9.20	Cable in fore and main tanks well flushed with water by hose. Depth of water in cable tanks: fore tank 3″, main tank 3″.
NOON	Moderate decreasing S'ly breeze. Fine, bright, and clear. Bar. 30·070 (72° F.). Temp. 67° F. dry, 63°·8 F. wet. Sea surface 64°·5 F. Position by observations { Lat. 5° 40′·5 S. Long. 81° 21′·2 W. } Pisura Point bearing S 65° E. Distance run since noon yesterday=179 N.M. Current observed since 3.42 a.m.=nil. Temp. in cable tanks, bottom of cone: fore tank 71° F., main tank 70½° F. During the morning tests taken on the cable in fore and main tanks; results satisfactory.

S.S. "SILVERTOWN."

HOUR. P.M.	MONDAY, MAY 22ND, 1893—*contd.*
4.0	Light SSE wind. Fine and clear. Slightly S'ly swell.
5.0	Sighted the Island of Lobos de Tierra on port bow.
6.0	Bearings { S extreme Lobos de Tierra Island S 53° E. N " " " S 88° E. } Current observed since noon=N, 5 N.M.=0·83 KT. Temp. in cable tanks, bottom of cone: fore tank $70\frac{1}{2}$° F., main tank 70° F.
8.0	Light SSE breeze. Fine and clear. Bar. 30·080 (66° F.). Temp. 64° F. dry, 63° F. wet. Sea surface 62°·5 F.
10.0	Observed Island of Lobos de Afuera bearing S 14° E.
10.44	Lagartija Island abeam, bearing S 50° W, 1·3 N.M. distant. No current observed since 6 p.m.
MIDNT.	Moderate SSE breeze and sea. Fine clear weather.

	TUESDAY, MAY 23RD, 1893.
A.M. 8.0	Moderate SE wind. Fine, but cloudy. Slight S'ly sea and swell. Bar. 30·140 (69° F.). Temp. 68°·3 F. dry, 65° F. wet. Sea surface 64°·2 F. Temp. in cable tanks, bottom of cone: fore tank 71° F., main tank $70\frac{1}{2}$° F.
9.20	Cable in fore and main cable tanks well flushed down with water by hose. Depth of water now in cable tanks: fore tank 4″., main tank 4″.
NOON.	Moderate SE by S breeze. Fine and clear. Bar 30·100 (72° F.). Temp. 73° F. dry, 62°·2 F. wet. Sea surface 66° F. Position by observations } Lat. 8° 38′·0 S. Long. 79° 45′·3 W. Distance run since noon yesterday=202·5 N.M. Current observed since 10.44 p.m. yesterday=S, 8·1 N.M.=0·62 KT.

HOUR. P.M.	TUESDAY, MAY 23RD, 1893—*contd.*
	Temp. in cable tanks, bottom of cone: fore tank 71½° F., main tank 71° F. During the morning tests taken on all cable in tanks, with satisfactory results.
2.0	Got bottom end of cable, Light Deep Sea, No. 1235B, Sec. "11A," in fore tank, and top end of cable, Light Deep Sea, No. 1235, pt. Sec. "7," in main tank, up on deck, and commenced to open them out for joint and splice together. 4 fms. for dry end and 14 fms. for this splice cut off the cable in fore tank, therefore 49·970 N.M. minus 0·018 N.M.= 49·952 N.M. of Light Deep Sea cable, No. 1235B, Sec. "11A," now remaining in fore tank.
3.11	Commenced joint between Light Deep Sea, No. 1235B, Sec. "11A," in fore tank, and Light Deep Sea, No. 1235, pt. Sec. "7," in main tank.
4.0	Fresh SE by S breeze. Fine clear weather. Moderate S'ly sea.
4.10	Joint between cable in fore and main tanks completed, tested, and passed. Commenced the splice.
5.20	Splice between Light Deep Sea, No. 1235B, Sec. "11A," in fore tank, and Light Deep Sea, No. 1235, pt. Sec. "7," in main tank completed, and bight of cable between the two tanks triced up on main deck. Total length of cable now remaining in tanks and spliced up together ready for laying out as spare cable for the C. & S. A. Tel. Co.:— Light Deep Sea, No. 1235B, Sec. "11A" .. .. .. =49·952 N.M. in fore tank. Light Deep Sea, No. 1235, pt. Sec. "7" .. .. .. =47·421 ,, main tank. Total .. =97·373 N.M.
6.0	Temp. in cable tanks, bottom of cone: fore tank 71° F., main tank 70½° F.
8.0	Fresh to strong SE by S breeze. Fine clear weather. Moderate sea from SE. Bar. 30·100 (68° F.). Temp. 65° F. dry, 62°·8 F. wet. Sea surface 65°·2 F.
MIDNT.	Similar weather.

Hour. A.M.	WEDNESDAY, MAY 24TH 1893.
4.0	Strong head wind. Cloudy and overcast.
8.0	Fresh SE by S wind. Fine, but overcast and gloomy. Slight sea from SE. Bar. 30·130 (66° F.). Temp. 63°·3 F. dry, 61°·8 F. wet. Sea surface 63°·8 F. Temp. in cable tanks, bottom of cone: fore tank 70½° F., main tank 70° F.
9·30	Sighted Mazorca Island bearing S 43° E.
10.0	Bearings { Mazorca Island S 40° E. / Pelado " S 15° E. Current observed since noon yesterday=S 44° E, 7·9 N.M. =0·35 KT.
NCON	Light SE by S breeze. Fine, but cloudy and overcast. Slight S'ly swell. Bar. 30·040 (68° F.). Temp. 64° F. dry, 62° F. wet. Sea surface 62°·5 F. Position { Lat. 11° 27′·3 S. / Long. 77° 43′·5 W. Bearings { Pelado Island W. / Mazorca Island N 9° W. / Chequitana Island N 15° E. Distance run since noon yesterday=209 N.M. Temp. in cable tanks, bottom of cone: fore tank 71½° F., main tank 70½° F. Tests taken on cable in fore and main tanks this morning, with satisfactory results.
P.M. 4.0	Moderate SE by S breeze. Fine, but cloudy and hazy. Sighted San Lorenzo Lighthouse bearing S 31° E.
5.40	Let go starboard anchor in 5¾ fms. of water in Callao Harbour; veered chain to 30 fms.

AT CALLAO.

TRANSFERRING CABLE.

COALING.

S.S. "SILVERTOWN."

MAY 24TH TO MAY 29TH, 1893.

AT CALLAO.

S.S. "SILVERTOWN."

Hour. P.M.	WEDNESDAY, MAY 24TH, 1893—*contd.*
	Observed S.S. "Relay" in the floating dry dock, and H.M.S. "Melpomene" at anchor in the harbour.
5.44	Capt. Lugar came alongside, and reported to Mr. Kingsford that the Chorrillos—Payta Section is interrupted, and that Mr. Scrymser asks Capt. Hunter to undertake the repairing of that section with the "Silvertown." The cable is faulty or broken down, about ten miles from Chorrillos Hut; that is to say, in about 14 fms. of water close to Fronton Island. Capt. Hunter informed Mr. Kingsford that he could not undertake the repairs to the cable, as considerable work, which will occupy about five days, has to be done in the engine-room of the "Silvertown"; besides the ship is too light, and therefore quite unfit to attempt any cable work in shallow water. NOTE.—It is expected that the S.S. "Relay" will leave the dry dock on Tuesday next.
5.52	Lowered steam-launch.
6.11	Mr. Baker, Manager of the Central and South American Telegraph Company in Lima, and Capt. Lugar came on board, also Mr. Drew, Agent for Messrs. T. Shute and Co., Ship Chandlers, with ship's mail.
8.0	Light SE by S breeze. Fine and clear, with heavy dew. Bar. 30·100 (68° F.). Temp. 60°·8 F. dry, 58°·3 F. wet. Sea surface 61°·8 F.
9.25	Mr. Drew left ship for shore, taking with him telegram, No. 24, for Silvergray, London, and a telegram from Mr. Baker for New York.

HOUR. A.M.	THURSDAY, MAY 25TH, 1893.
7.50	Mr. Falshaw, Chief Officer of the S.S. "Relay," came on board.
7.58	An empty lighter came alongside, to take in 4 N.M. of Light Intermediate cable for the "Relay."
8.0	Calm. Fine, but overcast and hazy. Bar. 30·130 (62° F.). Temp., 61°·2 F. dry, 60° F., wet. Sea surface 60°·2 F. Temp. in cable tanks, bottom of cone: fore tank 71° F., main tank 71° F. Draught of ship { Forward 14′ 0″. Aft 20′ 0″.
8.8	The Deputy Captain and the Doctor of Port came on board.
8.25	Mr. Baker, of the Central and South American Telegraph Company, left ship, taking with him telegram, No. 25, for Silvergray, London, explaining the reason why the "Silvertown" cannot undertake the repairs to the Chorrillos—Payta Section.
9.0	A Lieutenant from H.M.S. "Melpomene" came on board.
9.2	Commenced coiling in lighter alongside the 4 N.M. of Light Intermediate cable, No. 1951, pt. Sec. "2," originally part of San Juan del Sur north Shore-End, from starboard after lower pocket. This 4 N.M. of Light Intermediate Cable is to be taken to the S.S. "Relay," in return for the 3·935 N.M. of Light Intermediate cable received from the "Relay" on the 10th April last.
9.30	Tests made on the cable in fore and main tanks, with satisfactory results.
10.5	Capt. Lugar came on board. Received the following telegram:—"Matthew Gray says to Capt. Hunter, of 'Silvertown,' Callao, give every possible assistance with your ship and men to repair old cable quickly, Scrymser."
NOON.	Light variable airs. Fine clear weather. Bar. 30·100 (65° F.) Temp. 67° F. dry, 63·8° F. wet. Sea surface 62·5° F.

HOUR. P.M.	THURSDAY, MAY 25TH, 1893—*contd.*
1.30	Finished transferring the 4 N.M. of Light Intermediate to lighter.
2.5	Tests taken on the 4 N.M. of cable in lighter; results satisfactory, and ends sealed, after which covered cable with canvas, the latter well wetted.
2.10	Mr. Bates left in steam-launch, with lighter containing cable in tow, for floating dock, in which the "Relay" is. Mr. Bates goes to the "Relay" to ask Mr. Falshaw to take the cable out of the lighter at once, as it is very heavily laden.
2.22	Steam-launch returned from the "Relay" with a note, stating that Mr. Falshaw says he has received orders not to ship the 4 N.M. of cable from the lighter, which is now anchored close by floating dock.
3.0	A Customs Officer came on board for manifest.
4.22	Mr. P. Bates left for the "Relay" again and for shore, to see Mr. Drew and make some arrangements for the lighter, containing the 4 N.M. Light Intermediate Cable, to be taken to an anchorage in smooth water.
5.40	Mr. Drew left in steam-launch to take lighter, containing the 4 N.M. of Light Intermediate Cable, in tow for a quiet anchorage in shore.
6.0	Temp. in cable tanks, bottom of cone: fore tank $70\frac{1}{2}$° F., main tank 70° F.
6.10	Received a note from Mr. Falshaw, stating that the 4 N.M. of Light Intermediate Cable in lighter would be shipped on board S.S. "Relay" first thing to-morrow morning.
8.0	Light S'ly wind. Fine and clear. Bar. 30·100 (63° F.). Temp. 62° F. dry, 61° F. wet. Sea surface 61° F.

HOUR. A.M.	**Coaling.**
	FRIDAY, MAY 26TH, 1893.
6.0	Light N'ly wind. Overcast, with light thin rain.
6.15	Steam-launch went away to bring the lighter containing the 4 N.M. of Light Intermediate cable out from the inner harbour to the S.S. "Relay."
7.0	Commenced shipping coal in bunkers.
7.30	Steam-launch returned to ship, having left the lighter with cable alongside the floating dock in charge of Foreman Greenfield, of S.S. "Relay."
8.0	Light N'ly wind. Fine, but overcast and hazy. Bar. 30·130 (65° F.). Temp. 62° F. dry, 61°·5 F. wet. Sea surface 61° F.
8.40	R. Skinner (jointer's mate) left ship to join S.S. "Relay."
9.59	Dr. Campion came on board to consult with Dr. Toms concerning H. Williams, Hospital Attendant, who is very ill with liver complaint with complications.
10.50	Dr. Campion left ship. The doctors have decided that H. Williams should be taken to the hospital on shore.
NOON.	Light N'ly breeze. Fine, but overcast. Bar. 30·100 (67° F.). Temp. 64°·3 F. dry, 61°·8 F. wet. Sea surface 62°·5 F. Capt. Hunter received the following telegrams:— 1. "From Silvergray, London. Mr. Scrymser telegraphs will use 'Relay.' Come home through Smyth's Channel unless Morton object. Mr. Rymer-Jones to return Vera Cruz Galveston to examine duplex and report London, making repair if necessary. Have requested Mr. Scrymser to arrange credits Callao, Vera Cruz, Galveston. Take soundings as arranged." 2. "From Baker, Barranco. In view of your engine room repairs and the possibility of the 'Relay' being able to leave dock to-morrow or Monday, and considering our rough tests show fault about four miles from Chorrillos, 'Relay' will do the work unless 'Silvertown' could do it earlier and on eve of her departure south."

HOUR. P.M.	**Coaling**—*contd.*
	FRIDAY, MAY 26TH, 1893—*contd.*
2.18	Dr. Toms, with H. Williams, hospital attendant, left for shore, the latter to be taken to hospital.
3.13	Messrs. J. Rymer-Jones and J. F. Coote returned to ship from Chorrillos.
3.30	Received on board four deep sea thermometers and three sample cases of cable from England, one of the latter damaged
8.0	Calm. Fine, but cloudy. Bar. 30·120 (65° F.). Temp. 62°·5 F. dry, 60°·8 F. wet. Sea surface 62° F.
	SATURDAY, MAY 27TH, 1893.
A.M. 7.0	Resumed shipping coal in bunkers.
8.0	Light NW breeze. Fine, but overcast. Dull and damp weather. Bar. 30·120 (61° F.). Temp. 61° F. dry, 60° F. wet. Sea surface 62° F.
NOON.	Light NW breeze. Fine, but overcast. Bar. 30·120 (63° F.). Temp. 64°·2 F. dry, 61°·2 wet. Sea surface 62°·8 F.
P.M. 7.25	Finished shipping coal, having taken on board 532 tons in bunkers. Total amount of coal now on board about 1530 tons, viz.:—1000 tons in bunkers and 530 tons in fore hold.
8.0	Calm. Fine, but overcast. Bar. 30·150 (65°·5 F.). Temp. 63° F. dry, 61° F. wet. Sea surface 63° F.
	SUNDAY, MAY 28TH, 1893.
A.M. 8.0	Calm. Fine, but overcast and hazy. Bar. 30·175 (67° F.). Temp. 61°·3 F. dry, 59°·8 F. wet. Sea surface 62°·4 F. Draught of ship { Forward 16′ 0″. Aft 23′ 0″.
9.55	Received on board a telegram from Silvergray, London.

Hour. A.M.	SUNDAY, MAY 28TH, 1893—*contd.*
11.20	Received from Messrs. Graham Rowe & Co., the following telegram from Messrs. Gibbs & Co., Valparaiso, "'Silvertown,' Arauco can give anyhow 1000 tons, in all probability 2000 tons in 5 days. We cannot guarantee it on account of late strike. Send us instructions. Telegraph actual sailing." NOTE.—This telegram refers to arrangements made by Capt. Hunter with Messrs. Graham Rowe & Co., that the "Silvertown" would arrive at Coronel on 7th June, and would ship 2000 tons of coal if it could be put on board in 5 days. Replied to this telegram as follows:—"Capt. Hunter, 'Silvertown,' to Messrs. Gibbs & Co., Valparaiso. Will take as much coal as you can ship at Coronel in five days; if possible, 2000 tons. Sail from Callao daylight 30th."
NOON.	Light SW airs. Fine, but cloudy. Bar. 30·150 (65° F.). Temp. 70° F. dry, 65° F. wet. Sea surface 64° F.
P.M. 0.55	Capt. Parr, of H.M.S. "Melpomene," came on board.
1.30	H.M.S. "Royal Arthur," from the southward, arrived in the port.
2.30	Capt. Hunter left to visit Admiral Stephenson on board H.M.S. "Royal Arthur."
3.20	H.M.S. "Royal Arthur" left to overtake the mail steamer "Bolivia," which has gone south.
8.0	Light SW breeze. Fine, but cloudy. Bar. 30·130 (65° F.). Temp. 65° F. dry, 63°·2 F. wet. Sea surface 65° F.
9.20	Williams, late Hospital Attendant, who was taken to the hospital for treatment on Friday last, complains of his treatment at the Callao hospital, and asks to be allowed to return to ship.
11.5	Mr. J. Rymer-Jones reports that the tests taken on the completed Salina Cruz—San Juan del Sur, San Juan del Sur—Santa Elena, and Santa Elena—Chorrillos Sections are highly satisfactory, and that Mr. Kingsford will to-morrow forward to Capt. Hunter the certificates of acceptance of the cables.
MIDNT.	Light S'ly breeze. Fine, but cloudy, with heavy dew.

S.S. "SILVERTOWN."

HOUR. A.M.	MONDAY, MAY 29TH, 1893.
8.0	Calm. Fine and bright, but cloudy. Bar. 30·120 (64° F.). Temp. 61°·5 F., dry, 60°·3 F. wet. Sea surface 62°·5 F.
8.3	Temp. in cable tanks, bottom of cone: fore tank 72° F., main tank 71½° F.
9.16	H. Williams, late Hospital Attendant, left for shore, to return to the care of the British Consul, as originally arranged.
9.30	Captain Morton and Mr. Combe left for shore, to take sights for chronometer errors.
11.22	Mr. J. Rymer-Jones left for shore to wire particulars of tests to Mr. Kingsford.
NOON.	Light S'ly breeze. Fine, but cloudy. Bar. 30·120 (66° F.). Temp. 67° F. dry, 63° F. wet. Sea surface 64° F. Temp. in cable tanks, bottom of cone: fore tank 71½° F, main tank 71° F.
P.M. 2.11	Mr. H. S. Howard came on board, bringing certificate for cables from Mr. Kingsford.
3.9	Captain W. R. Lugar and family came on board for passage to London.
3.16	Sent telegram, No. 26, to Silvergray, London, from Capt. Hunter.
5.5	Hoisted up steam-launch and other boats, and made ready for putting to sea to-morrow morning.
6.1	T. J. Lewis, A.B., taken on board to work his passage to London.
8.0	Light S'ly wind. Fine, but cloudy. Bar. 30·100 (68° F.). Temp. 63° F. dry, 61°·2 F. wet. Sea surface 62°·5 F. During this evening tests taken with satisfactory results on the spliced sections of Light Deep Sea cable in fore and main tanks, forming the "spare" cable, and top end in fore tank, sealed ready for laying the cable to-morrow between Solar Point, Chorrillos, and San Gallan Island, near Pisco.
MIDNT.	Similar weather, with much dew.

LAYING SPARE CABLE BETWEEN CHORRILLOS AND PISCO.

START ON HOMEWARD VOYAGE.

S.S. "SILVERTOWN.'

MAY 30TH, 1893.

LAYING SPARE CABLE BETWEEN CHORRILLOS AND PISCO.

S.S. "SILVERTOWN."

HOUR.
A.M.

TUESDAY MAY 30TH, 1893.

3.25 Mr. J. Rymer-Jones, who goes to the Gulf of Mexico to examine the duplex apparatus at Galveston and Vera Cruz, left ship for the sailing ship "Dartford," to remain there till about 10 a.m. when he will proceed to the mail steamer "Mapocho," for passage to Panama.

4.0 Light NW breeze. Fine, but cloudy and overcast.

4.30 Weighed anchor and set on for position to lay out the spare cable that is in fore and main tanks, viz:— (See note 5.20 p.m., 23rd inst.).

Light Deep Sea, No. 1235B,
Sec. "11A" .. .. = 49·952 N.M. in fore tank.
Light Deep Sea, No. 1235,
pt. Sec. "7" .. .. = 47·421 „ main tank.

Total .. = 97·373 N.M.

5.15 Stopped ship for engine-room purposes.

5.38 Set on on course again.

6.0 San Lorenzo Lighthouse bearing E, 1·8 N.M. distant.

7.0 Hauled the top end of Light Deep Sea cable, No. 1235B, Sec. "11A," from fore tank, along leads and 4 times round paying-out drum to stern sheaves, and there made it fast to a 2 cwt. 0 qrs. 9 lbs. mushroom with 2 fms. of $\frac{5}{8}''$ chain.

8.0 Light NW breeze. Fine, but overcast, dull and hazy. Heavy S'ly swell.
Bar. 30·100 (66° F.). Temp. 61°·5 F. dry, 61°·3 F. wet. Sea surface 62°·5 F.

8.10 Stopped ship's engines. Off Solar Point, Chorrillos.

HOUR. A.M.	TUESDAY, MAY 30TH, 1893—*contd.*
8.18	Sounded in $26\frac{1}{2}$ fms.
8.20	Commenced to pay out over stern sheave Light Deep Sea, No. 1235B, Sec. "11A," with paying-out machine.
8.21	Set on "slow ahead." Position of ship: Solar Point bearing N 72° E. Chorrillos Point and Codo Point 27° 20′. Solar Point and Codo Point 27° 15′ Chorrillos Point bearing N 40° E. Lat. 12° 13′·1 S. Long. 77° 5′·4 W.
8.24	Stopped ship's engines.
8.26	Set on slow ahead. Ship on course S 18° E.
8.29	Stopped ship's engines. $\frac{1}{3}$-mile of cable paid out.
8.33	Stopped paying out cable and put engine of paying-out machine out of gear. 0·5 N.M. OF LIGHT DEEP SEA, No. 1235B, SEC. "11A," PAID OUT FROM FORE TANK.
8.34	Set on "slow ahead." Cable running out slowly. Cable hands assisting drum to revolve. Brakes right up. Weight on brake levers=849 lbs.
9.0	2·527 N.M. OF SPARE CABLE LAID. Patent log=2·0 N.M. Drum=$28\frac{1}{2}$ revs. per min.=5·0 KTS. Ship's engines=35 revs. per min. Weight on brake levers=849 lbs. Dynamometer=(lifting, as ship pitches). Strophometer=28 to 31 revs.
9.6	Increased ship's engines to 40 revs. per min.
9.20	Increased ship's engines to 45 revs. per min.
10.0	9·353 N.M. OF SPARE CABLE LAID. Patent log=8·0 N.M. Drum=42 revs. per min.=7·4 KTS. Ship's engines=44 revs. per min. Weight on brake levers=849 lbs. Dynamometer=(lifting). Strophometer=39 revs.

HOUR. A.M.

TUESDAY, MAY 30TH, 1893—*contd.*

Starboard watch of cable hands employed baling water out of main cable tank with buckets.

Ship pitching to a long and moderate SW swell.

Dynamometer lifting at times from 0 to 6 cwt.

11.0 — 17·216 N.M. OF SPARE CABLE LAID.

Patent log=15·0 N.M.

Drum=44½ revs. per min.=7·83 KTS. Ship's engines=45½ revs. per min. Weight on brake levers=849 lbs. Dynamometer=(lifting). Strophometer=37 to 43 revs.

Bearings { Chilca Point S 84° E. / Pachacamac Island N 23° E. }

11.37 — Decreased weight on brake levers to 284 lbs., and put brakes down.

A mean strain of 6½ cwt. is put on to counteract the pitching of the ship.

NOON. — Light WSW wind. Fine, but overcast. Long S'ly swell Ship pitching a good deal.

Bar. 30·080 (69° F.). Temp. 62° F. dry, 60° F. wet. Sea surface 62°·8 F.

24·873 N.M. OF SPARE CABLE LAID.

Patent log=21·9 N.M.

Drum=43½ revs. per min.=7·65 KTS. Ship's engines=46 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6½ cwt. (mean). Strophometer=37 to 45 revs.

Position { Lat. 12° 36′·7 S. / Long. 76° 57′·5 W. } Bearings { Calavera Head bearing N 73° E. / Chilca Point bearing N 57° E. }

Distance run since 8.21 a.m.=24·45 N.M.

SLACK ON CABLE=1·73°/ₒ.

P.M.

1.0 — 32·703 N.M. OF SPARE CABLE LAID.

Patent log=28·7 N.M.

Drum=44 revs. per min.=7·74 KTS. Ship's engines=46 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6½ cwt. Strophometer=43 revs.

2.0 — 40·454 N.M. OF SPARE CABLE LAID.

Patent log=35·5 N.M.

Drum=44 revs. per min.=7·74 KTS. Ship's engines=46 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6½ cwt. Strophometer=34 to 45 revs.

Hour. P.M.	TUESDAY, MAY 30TH, 1893—*contd.*
	H.M.S. "Royal Arthur" away off starboard bow, at target practice.
2.54	About to change from fore tank to main tank. Reduced ship's engines to 30 revs. per min.
3.0	48·293 N.M. OF SPARE CABLE LAID. Patent log=42·3 N.M. Drum=32 revs. per min.=5·6 KTS. Ship's engines=31 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6½ cwt. Strophometer=30 revs.
3.10	Increased weight on brake levers to 849 lbs. (12 weights).
3.14	Stopped ship's engines. Exchanged the following signals with H.M.S. "Royal Arthur:"—"Adieu. Wish you pleasant voyage."
3.26	Put brakes down and held cable. Ship stopped. Patent log=43·3 N.M.
3.28	Strain=20 cwt. All clear in tanks. Lifted brakes right up, and set on easy ahead.
3.32	SPLICE between Light Deep Sea, No. 1235B, Sec. "11A," from fore tank, and Light Deep Sea, No. 1235, pt. Sec. "7," from main tank, passed off drum. 49·892 N.M. of Light Deep Sea, No. 1235B, Sec. "11A," paid out from fore tank. Length by Factory measurement of this piece of Light Deep Sea paid out .. .. =49·952 N.M. Length by Drum measurement of this piece of Light Deep Sea paid out .. .. =49·892 " Difference = 0·060 " Fore tank now empty. Position of Splice { Lat. 12° 59′·8 S. Long. 76° 48′·0 W.
3.33	Decreased weight on brake levers to 284 lbs.
3.36	Increased ship's engines to 40 revs. per min.
4.0	Calm. Fine and clear. Moderate southerly sea and swell. Very hazy horizon. Bar. 30·020 (72° F.). Temp. 64°·5 F. dry, 61° F. wet. Sea surface 62°·5 F.

HOUR. P.M.	TUESDAY, MAY 30TH, 1893—*contd.*
	2·754 N.M. of Light Deep Sea, No. 1235, pt. Sec. "7," paid out from main tank. 52·706 N.M. OF SPARE CABLE LAID. Patent log=45·6 N.M. Drum=40 revs. per min.=7·0 KTS. Ship's engines=39 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6½ cwt. Strophometer=30 to 40 revs.
4.5	Increased ship's engines to 45 revs. per min.
4.37	Increased ship's engines to full speed.
5.0	10·355 N.M. of Light Deep Sea, No. 1235, pt. Sec. "7," paid out from main tank. 60·307 N.M. OF SPARE CABLE LAID. Patent log=51·5 N.M. Drum=45 revs. per min.=7·92 KTS. Ship's engines=46 revs. per min. Weight on brake levers=284 lbs. Dynamometer=9 cwt. Strophometer=30 to 46 revs.
5.30	Southerly swell, heavy at times, causing ship to pitch considerably.
6.0	18·262 N.M. of Light Deep Sea, No. 1235, pt. Sec. "7," paid out from main tank. 68·214 N.M. OF SPARE CABLE LAID. Patent log=57·8 N.M. Drum=43 revs. per min.=7·56 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=9 cwt. Strophometer=32 to 47 revs.
6.18	Appx. position by stars { Lat. 13° 16′·0 S. Long. 76° 41′·5 W. Current observed since noon=S 49° E, 5·4 N.M.=0·85 KT.
7.0	26·001 N.M. of Light Deep Sea, No. 1235, pt. Sec. "7," paid out from main tank. 75·953 N.M. OF SPARE CABLE LAID. Patent log=64·1 N.M. Drum=43½ revs. per min.=7·66 KTS. Ship's engines=47 revs. per min. Weight on brake levers=284 lbs. Dynamometer=9 cwt. Strophometer=32 to 47 revs.

HOUR. P.M.	TUESDAY, MAY 30TH, 1893—*contd.*
7.6	Decreased weight on brake levers to 142 lbs.
7.12	Ran a quantity of the water out of tank under paying-out machine.
7.20	Increased weight on brake levers to 284 lbs. Reduced strain to 6½ cwt. Ship pitching less heavily.
8.0	Moderately S'ly breeze. Fine, bright, and clear. Heavy S'ly swell, with moderate sea. Heavy dew. Bar. 30·05 (67° F.). Temp. 61°·5 F. dry, 60°·2 F. wet. Sea surface 61°·5 F. 33·963 N.M. of Light Deep Sea, No. 1235, pt. Sec. "7," paid out from main tank. 83·915 N.M. OF SPARE CABLE LAID. Patent log=70·7 N.M. Drum=45½ revs. per min.=8·0 KTS. Ship's engines=47 revs. per min. Weight on brake levers=284 lbs. Dynamometer=6½ cwt. Strophometer=36 to 46 revs.
8.35	End of cable handed over to jointer to seal.
9.0	41·646 N.M. of Light Deep Sea, No. 1235, pt. Sec. "7," paid out from main tank. 91·958 N.M. OF SPARE CABLE LAID. Patent log=77·5 N.M. Drum=42 revs. per min.=7·39 KTS. Ship's engines=46½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=7 cwt. Strophometer=28 to 40 revs.
9.3	Decreased ship's engines to 35 revs. per min.
9.30	44·348 N.M. of Light Deep Sea, No. 1235, pt. Sec. "7," paid out from main tank. 94·300 N.M. OF SPARE CABLE LAID. Patent log=79·8 N.M. Drum=30½ revs. per min.=5·37 KTS. Ship's engines=33½ revs. per min. Weight on brake levers=284 lbs. Dynamometer=6½ cwt. Strophometer=20 to 28 revs. San Gallan Island bearing S 28° E.
9.45	Decreased ship's engines to 30 revs. per min. Approaching end of cable.
9.46	Increased weight on brake levers to 849 lbs.

HOUR. P.M.	TUESDAY, MAY 30TH, 1893—*contd.*
10.2	Stopped ship's engines.
10.6	Moving engines as required to ease out cable end. Dynamometer=(lifting).
10.22	Sounded in 83 fms., soft green mud.
10.26	End of cable Light Deep Sea, No. 1235, pt. Sec. "7," from main tank passed off drum and over stern-sheave outboard with 4″ rope attached, paying out on rope till end of cable on bottom. Light Deep Sea, No. 1235, pt. Sec. "7," paid out by Drum measurement .. .. =47·361 N.M. Light Deep Sea, No. 1235, pt. Sec. "7," paid out by Factory measurement .. .. =47·421 ,, Difference = 0·060 ,, 49·952 N.M.+47·421 N.M.=97·373 N.M. of cable laid as "spare cable" for C. & S. A. Tel. Co. This clears all the C. & S. A. Tel. Co.'s cable out of ship. All tanks now empty.
10.30	As end of cable now on bottom cut rope and let end go, nothing attached to it. About 105 fms. of the 4″ rope paid out. Position { Lat. 13° 44′·4 S. Long. 76° 32′·5 W. } { Ballista Island bearing E. San Gallan Island, western extreme, bearing S 29° E. }
10.31	Set on full speed for Coronel.
11.24	San Gallan Island abeam, bearing E, 2·2 N.M. distant.
MIDNT.	Fresh SSE wind. Fine and clear. Moderate head sea and swell. Ship pitching.

EXPENDITURE TABLES.

DETAILS OF CABLE EXPENDED.

Date.	Type.	Factory No.	Section.	Tank. in Ship.	Laid.	Splices.	Damaged or abandoned.	Transferred to S.S. "Relay."	Remarks.
1893.					N.M.	N.M.	N.M.	N.M.	
December, 1892, to January, 1893	H.I.	1952	...	...	...	0·0500	...	...	Expended in loading ship. December, 1892, to January, 1893.
	,,	1952A	...	...	...	·0100	...	...	
	L.I.	1951	...	...	...	0·0640	0·0040	...	
	L.D.S.	1235	...	...	...	0·0980	0·0580	...	
	,,	1235B	...	...	...	...	0·0300	...	
March 21st ...	S.E.	1953B	3 C	M.	...	...	...	1·197	The 1 knot and 200 fms. ordered for S.S. "Relay."
,, 24th ...	,,	,,	Pt. 3 B	F.	...	...	0·0050	...	Surplus cable on beach at Chorrillos.
,, ,, ...	,,	,,	,,	,,	7·495	...	...	...	Chorrillos Shore-End, Chorrillos—Santa Elena Section.
,, ,, ...	H.I.	1952	Pt. 3	,,	3·490	...	...	...	
,, 25th ...	L.I.	1951	Pt. 2	,,	21·981	...	0·0050	...	(Corrected to 7.4.93 for final splice.)
April 1st ...	S.E.	1953B	Pt. 3 B	M.	7·000	...	...	...	Santa Elena Shore-End, Santa Elena—San Juan del Sur Section.
,, ,, ...	H.I.	1952	Pt. 3	,,	1·990	...	...	...	
,, ,, ...	L.I.	1951	Pt. 2	,,	0·978	...	...	...	(Corrected to 16.4.93 for splice with piece of L.I. cable ex "Relay.")
,, 2nd	S.E.	1953B	Pt. 3 B	A.	6·000	...	...	...	Santa Elena Shore End.
,, ,, ...	H.I.	1952	Pt. 3	,,	3·490	...	...	...	Santa Elena—Chorrillos Section, laid 2.4.93—7.4.93.
,, ,, ...	L.I.	1951	Pt. 2	,,	1·990	...	...	...	

Date.	Type.	Factory No.	Section.	Ship in Tank.	Laid.	Splices.	Damaged or abandoned.	Transferred to S.S. "Relay."	Remarks.
1893. April 2nd	L.D.S.	1235	Pt. 10	A.	64·979	...	...	...	
" 5th	"	"	6	"	419·570	...	...	...	
" 7th	"	"	Pt. 11	"	271·286	0·0100	0·0170	...	(Final splice.)
" 16th	L.I.	1951	Pt. 2	M.	...	0·0095	0·0025	...	Cut off Santa Elena North End for splice with L.I. ex "Relay."
" "	"	?	Pt. 2 A	"	3·894.	...	0·0410	...	A piece of L.I. cable ex "Relay," spliced on to Santa Elena North Shore-End, and corrected for final splice 18.5.93.
" 25th	S.E.	1953B	Pt. 3 B	"	3·495	0·0050	...	...	(Corrected to 26.4.93 for splice with 0·055 N.M. of S.E. from fore tank to reach office.)
" "	H.I.	1952	Pt. 3	"	9·490	...	...	...	San Juan del Sur Shore-End, Salina Cruz—San Juan del Sur Section.
" "	L.I.	1951	Pt. 2	"	17·976	...	0·0140	...	(Corrected for final splice 7.5.93.)
" 26th	S.E.	1953B	Pt. 3 B	F.	0·055	...	0·0090	...	Spliced on to San Juan del Sur North Shore-End on beach to reach office, cut off piece "F" in fore tank.
" 29th	L.D.S.	1235	Pt. 10	"	...	0·0140	0·0090	...	Splice with L.D.S. pt. "11" in after tank and dry end, joining up tanks.
May 2nd... ...	S.E.	1953B	Pt. 3 B	"	...	...	0·0130	...	Cut off Salina Cruz End, surplus cable on end on beach.
" 3rd	"	"	"	"	3·923	...	...	...	Salina Cruz Shore-End.
" "	H.I.	1952	Pt. 3	"	6·990	...	...	...	
" "	"	1952A	Pt. 3 A	"	5·000	...	...	...	
" "	L.I.	1951	Pt. 2	"	5·490	...	...	...	

May 4th ...	L.D.S.	1235	Pt. 10	,,	106·497	...	...	...	Salina Cruz—San Juan del Sur Section.
,, 5th ...	,,	,,	Pt. 11	A.	74·481	...	...	...	
,, 6th ...	,,	,,	9	,,	...	0·0140	0·0050	...	(Splice with L.D.S., pt. Sec. "10" in main tank and dry end.)
,, ,, ...	,,	,,	Pt. 10	M.	...	...	0·0060	...	(,, ,, Sec. "9" in after tank dry end.)
,, 7th ...	,,	,,	9	A.	401·942	...	...	...	
,, ,, ...	,,	,,	Pt. 10	M.	54·576	0·0090	0·0150	...	(Final splice.)
,, 9th...	,,	,,	,,	,,	...	0·0110	...	...	Splice with L.I. piece "D" in fore tank before turning over.
,, 12th...	S.E.	1953B	Pt. 3 B	,,	...	...	0·0680	...	Surplus cable on beach, San Juan del Sur South Shore-End.
,, ,, ...	,,	,,	,,	,,	3·432	...	...	...	San Juan del Sur Southern Shore-End.
,, ,, ...	H.I.	1952A	Pt. 3 A	,,	4·990	...	...	...	San Juan del Sur—Santa Elena Section.
,, ,, ...	L.I.	1951	Pt. 2	,,	21·986	...	...	...	
,, 14th...	L.D.S.	1235	Pt. 10	,,	205·383	...	...	...	
,, 16th...	,,	,,	5	,,	416·067	...	...	...	
,, 18th...	,,	,,	Pt. 7	,,	368·142	0·0080	0·0290	...	(Final splice.)
,, 23rd...	,,	1235B	11 A	F.	...	0·0140	0·0040	...	Splice with pt. Sec. "7" in main tank.
,, 25th...	L.I.	1951	Pt. 2	M.	...	...	...	4·000	To replace length supplied by S.S. "Relay."
,, 30th...	L.D.S.	1235B	11 A	F.	49·952	...	...	...	Spare cable laid between Chorrillos and Pisco.
,, ,, ...	,,	1235	Pt. 7	M.	47·421	...	...	...	
					2621·4310	0·3165	0·3345	5·1970	

TOTAL CABLE SUPPLIED = 2627·279 N.M., viz.—Total manufactured ... ... = 2623·344 N.M.
Received from S.S. "Relay" = 3·935 ,,

TOTAL ... = 2627·279 N.M.

SUMMARY OF EXPENDITURE OF CABLE.

Type.	Factory No.	Salina Cruz—San Juan del Sur Section.	San Juan del Sur—Santa Elena Section.	Santa Elena—Chorrillos Section.	Transferred to S.S. "Relay."	Expended for Splices.	Damaged or Abandoned.	Spare Cable laid.	Total Cable Supplied.
		N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.	N.M.
Shore-End	1953B	7·473	10·432	13·495	1·197	0·0050	0·0950	....	32·697
Heavy Intermediate ...	1952	16·480	1·990	6·980	....	0·0500	....	....	25·500
" "	1952A	5·000	4·990	....	....	0·0100	....	....	10·000
Light Intermediate	1951	23·466	22·964	23·971	4·000	0·0735	0·0255	....	74·500
" Deep Sea	1235	637·496	989·592	755·835	....	0·1640	0·1390	47·421	2430·647
" " "	1235B	....	....	....	....	0·0140	0·0340	49·952	50·000
" Intermediate ...	Ex S.S. "Relay"	....	3·894	....	....	....	0·0410	....	3·935
Totals	=	689·915	1033·862	800·281	5·197	0·3165	0·3345	97·373	2627·279*

* Total Cable manufactured .... = 2623·344 N.M.
Cable received from S.S. "Relay" .... = 3·935 "

Total .... = 2627·279 N.M.

POSITION SHEETS.

POSITION SHEET.

SANTA ELENA---CHORRILLOS SECTION.

SANTA ELENA—CHORRILLOS SECTION.

Commenced March 24th, 1893. *Completed April 7th*, 1893.

No.	Positions.		Courses (True).		Distance.		Cable paid out.		Factory No.	Slack paid out.		Slack °/o		Average Depth.	Remarks.
	Lat. S.	Long. W.	Steered.	Made good.	Between Positions.	Total.	Between Positions.	Total.		Between Positions.	Total.	Between Positions.	Total.		
	° ′	° ′			N.M.	N.M.	N.M.	N.M.		N.M.	N.M.			fms.	
1	2 12·0	80 58·0	...	...	...	...	...	...	... ...	...	...	...	...	...	CABLE HUT AT SANTA ELENA, 2.4.93.
2	2 11·2	80 57·5	...	...	0·900	0·900	1·006	1·006	... ...	0·106	0·106	...	...	6½	Ship's Anchorage. Bearings: Left Tangent Light-house Hill, N 89° W.; Cable House, S 32° W.; Rocky Point S 24° E.; Jacinto Point S 43° E. Angles: Cable House with Left Tangent Light-house Hill 60° 0′; Cable House with Rocky Point 56° 16′; Jacinto Point with Rocky Point 17° 55′; By V. A. Light-house Hill = 1·5 N.M. dist.
3	2 10·7	80 57·1	N 32° E	N 32° E	0·600	...	...	...	... ...	...	...	...	...	9	Changed course to N 3° W.
4	2 9·5	80 57·4	N 3° W	N 14° W	1·250	2·750	1·907	2·913	... ...	0·057	0·163	3·0	5·9	12	Changed course to N 60° W.
5	2 8·1	80 59·9	N 60° W	N 61° W	2·900	5·650	3·087	6·000	S.E. 1953B	0·187	0·350	6·4	6·2	18	Changed course to N 67° W. Splice Shore-End—Heavy Intermediate.
6	2 6·7	81 2·95	N 67° W	N 67° W	3·350	9·000	3·490	9·490	H.I. 1952	0·140	0·490	4·2	5·4	35	Changed course to N 80° W. Splice Heavy Intermediate—Light Intermediate.
7	2 6·3	81 4·8	N 80° W	N 80° W	1·850	10·850	1·990	11·480	L.I. 1951	0·140	0·630	7·5	5·8	125	Changed course to S 83° W. Splice Light Intermediate—Light Deep Sea.
8	2 7·5	81 15.5	S 83° W	S 84° W	11·775	22·625	12·894	24·374	L.D.S. 1235	1·119	1·749	9·5	7·7	800	Changed course to S 29° W.
9	2 14·2	81 20·0	S 29° W	S 29½° W	8·750	31·375	9·634	34·008	,, ,,	0·884	2·633	10·1	8·4	1100	Changed course to S 9½° W, 10.4 p.m., 2.4.93.

10	2	51·1	81	29·1	...	...	...	...	...	...	...	...	...	...	...	...	1400	Splice Light Deep Sea—Light Deep Sea, pt. Sec. "10" and Sec. "6."
11	3	34·7	81	37·3	S 9½° W	S 13½° W	82·064	113·439	92·890	126·898	L.D.S.	1235	10·826	13·459	13·1	11·8	1700	Noon by observations, 3.4.93.
12	4	13·0	81	38·4	...	...	...	...	...	...	...	...	...	...	...	...	1700	Fix by stars, 6.38 p.m.
13	4	34·0	81	40·0	S 9½° W	S 3° W	59·000	172·439	65·384	192·282	L.D.S.	1235	6·384	19·843	10·8	11·5	1700	Changed course to S 32° E, 9.20 p.m., 3.4.93.
14	4	45·0	81	36·3	S 32° E	S 19° E	11·500	183·939	12·206	204·488	,,	,,	0·706	0·549	6·1	11·1	1750	Changed course to S 7½° E, 11 p.m., 3.4.93.
15	6	4·0	81	25·0	S 7½° E	S 8½° E	79·800	263·739	82·281	286·769	,,	,,	2·481	23·030	3·1	8·7	1000	Changed course to S 19° E, 10 a.m., 4.4.93.
16	6	19·8	81	19·2	...	...	...	...	...	...	...	...	...	...	...	...	1000	Noon by observations, 4.4.93.
17	6	47·7	81	7·5	S 19 E°	S 21½° E	47·000	310·739	48·820	335·589	L.D.S.	1235	1 820	24·850	3·8	8·0	1300	Changed course to South, 4.30 p.m., 4.4.93.
18	7	4·5	81	6·5	South	S 2½° E	16·600	327·339	17·665	353·254	,,	,,	1·065	25·915	6·4	7·9	1047	Changed course to S 27° E, 6.48 p.m., 4.4.93.
19	8	46·7	80	15·2	...	...	...	...	...	...	...	...	...	...	...	...	900	Noon by observations, 5.4.93.
20	9	4·9	80	3·7	...	...	...	...	...	...	...	...	...	...	...	...	890	Splice Light Deep Sea—Light Deep Sea, Secs. "6" and "11."
21	9	48·5	79	43·6	S 27° E	S 26° E	183·500	510·839	192·911	546·165	L.D.S.	1235	9·411	35·326	5·1	6·9	800	Changed course to S 40° E, midnight.
22	10	13·3	79	25·6	...	...	...	...	...	...	...	...	...	...	...	...	960	Fix by stars, 5.30 a.m., 6.4.93.
23	10	44·0	79	2·8	...	...	...	...	...	...	...	...	...	...	...	...	1050	Noon by observations, 6.4.93.
24	11	12·4	78	36·3	...	...	...	...	...	...	...	...	...	...	...	...	1000	Fix by stars, 6.23 p.m.
25	12	2·7	77	52·2	S 40° E	S 39¼° E	173·150	683·989	199·225	745·390	L.D.S.	1235	26·075	61·401	15·0	8·9	200	Changed course to S 63° E, 6.34 a.m., 7.4.93.
26	12	9·0	77	40·0	S 63° E	S 63° E	12·200	...	...	...	...	...	...	...	...	...	171	Changed course to turning to buoy.
27	12	16·2	77	34·4	Curve	Curve	9·000	705·189	21·925	767·315	L.D.S.	1235	0·725	62·126	3·4	8·8	137	Final Splice.
28	12	11·5	77	13·1	...	...	...	...	...	...	L.I.	1951	...	...	...	...	30	Splice Light Intermediate—Heavy Intermediate.
29	12	10·9	77	10·0	...	...	...	...	...	...	H.I.	1952	...	...	...	...	13	Splice Heavy Intermediate—Shore-End.
30	12	9·5	77	3·6	N 80° E	N 78° E	30·900	736·089	31·824	799·139	...	...	0·924	63·050	3·0	8·5	8	Ship's anchorage, 24.3.93.
31	12	10·35	77	3·0	...	...	1·060	737·149	1·142	800·281	S.E.	1953B	0·082	63·132	...	8·5	...	CABLE HUT AT CHORRILLOS.

POSITION SHEET.

SAN JUAN DEL SUR—SANTA ELENA SECTION.

SAN JUAN DEL SUR—SANTA ELENA SECTION.

Commenced April 1st, 1893. *Completed May 18th, 1893.*

No.	Positions. Lat. N.	Positions. Long. W.	Courses (True). Steered.	Courses (True). Made good.	Distance. Between Positions.	Distance. Total.	Cable paid out. Between Positions.	Cable paid out. Total.	Factory No.	Slack paid out. Between Positions.	Slack paid out. Total.	Slack %. Between Positions.	Slack %. Total.	Average Depth.	Remarks.
	° ′	° ′			N.M.	N.M.	N.M.	N.M.		N.M.	N.M.			fms.	
1	11 15·1	85 52·84	...	...	...	...	...	...	...	...	...	...	...	...	**Cable House, San Juan del Sur, 12.5.93.**
2	11 15·34	85 52·88	...	...	...	...	...	...	...	...	...	...	...	...	Cable landing, San Juan del Sur.
3	11 15·18	85 53·59	...	...	0·850	0·850	0·920	0·920	S.E. 1953B	0·070	0·070	...	...	9	Ship's anchorage. { Lot's Wife Rock and No. 1 Point < 13° 44′; No. 2 Point and No. 1 Point < 56° 12′; No. 2 Point and Cable House < 64° 50′; No. 3 Point and Cable House < 60° 46′; Lot's Wife Rock bearing N 36° W; No. 3 Point bearing S 23½° E ... } Changed course to S 70° W.
4	11 14·3	85 55·95	S 70° W	S 70° W	2·510	3·360	2·512	3·432	" "	0·002	0·072	...	2·1	27	Splice Shore-End — Heavy Intermediate. Changed course to S 47° W, 7.8 p.m. 12.5.93.
5	11 11·1	85 59·82	...	...	...	...	...	8·422	H.I. 1952A	...	...	...	...	45	Splice Heavy Intermediate — Light Intermediate.
6	10 56·9	86 16·8	S 47° W	S 47° W	25·650	29·010	26·976	30·408	L.I. 1951	1·326	1·398	5·2	4·8	104	Splice Light Intermediate—Light Deep Sea. Changed course to S 17½° W, 0.52 a.m., 13.5.93.
7	10 30·8	86 26·0	...	...	...	56·560	...	60·060	L.D.S. 1235	...	...	...	...	950	Position by land and observations, 6 a.m., 13.5.93.
8	10 21·6	86 29·7	S 17½° W	S 19¾° W	37·507	66·517	40·940	71·348	" "	3·433	4·831	9·1	7·3	1300	Changed course to S 37° E, 7.30 a.m., 13.5.93.
9	9 53·1	86 8·7	...	...	...	102·217	...	109·458	" "	...	...	...	...	1000	Observed noon, 13.5.93.
10	9 16·7	85 41·2	S 37° E	S 36° E	81·200	147·717	86·556	157·904	" "	5·356	10·187	6·6	6·9	1550	Changed course to S 27° E, 6 p.m., 13.5.93.

11	8	11·6	85	7·3	...	...	...	220·932	...	235·791	,,	,,	...	...	...	...	1350	Splice Light Deep Sea—Light Deep Sea, 2.38 a.m., 14.5.93.
12	7	45·2	84	53·9	S 27° E	S 27° E	102·760	250·477	110·058	267·962	,,	,,	7·298	17·485	7·1	7·0	730	Changed course to S 20° E, 6.9 a.m., 14.5.93.
13	6	59·1	84	36·3	...	...	...	299·777	...	323·033	,,	,,	...	...	...	...	900	Noon (Engineer's time), 14.5.93.
14	6	8·2	84	17·5	...	...	...	353·994	...	387·005	,,	,,	...	...	...	...	950	Approximate position by stars, 6.44 p.m., 14.5.93.
15	4	46·5	83	47·8	...	...	...	440·879	...	479·237	,,	,,	...	...	...	...	1700	Approximate position by stars, 5.21 a.m., 15.5.93.
16	4	41·6	83	46·0	S 20° E	S 20° E	195·620	446·097	217·734	485·696	,,	,,	22·114	39·599	11·3	8·9	1820	Changed course to S 16° E, 6.7 a.m., 15.5.93.
17	3	59·3	83	32·5	...	...	...	490·422	...	534·511	,,	,,	...	...	...	...	1790	Observed noon, 15.5.93.
18	3	15·9	83	14·7	...	...	...	537·422	...	587·713	,,	,,	...	...	...	...	1700	Approximate position by stars, 6.37 p.m. 15.5.93.
19	2	20·7	82	55·4	...	...	...	595·772	...	651·858	,,	,,	...	...	...	...	1660	Splice Light Deep Sea—Light Deep Sea. 3.27 a.m., 16.5.93.
20	1	33·9	82	38·0	...	S 20½° E	199·625	645·722	223·922	709·618	,,	,,	24·297	63·896	12·2	9·9	1730	Observed noon, 16.5.93.
21	1	1·6	82	30·5	...	...	...	...	...	749·175	,,	,,	...	...	...	...	1800	Approximate position by stars, 6.35 p.m., 16.5.93.
22	0	S. 26·9	82	23·6	...	...	...	767·522	...	853·111	,,	,,	...	...	...	...	1000	Observed noon, 17.5.93.
23	0	30·1	82	23·1	S 16° E	S 7° E	125·100	770·822	147·294	856·912	,,	,,	22·194	86·090	17·7	11·2	1000	Changed course to S 37° E, 0.30 p.m., 17.5.93
24	2	7·0	81	28·5	S 37° E	S 29½° E	111·250	882·072	129·195	986·107	,,	,,	17·945	104·035	16·1	11·8	2000	Changed course to S 76° E, 6.30 a.m., 18.5.93.
25	2	8·2	81	22·6	S 76° E	S 78° E	6·000	888·072	6·674	992·781	,,	,,	0·674	104·709	11·2	11·8	1000	Changed course to N 57° E, 7.19 a.m., Santa Elena Point S 81° E.
26	2	5·8	81	18·1	N 57° E	N 62½° E	5·100	893·172	5·658	998·439	,,	,,	0·558	105·267	10·9	11·8	670	Changed course to N, 7.56 a.m., Santa Elena Point S 72° E.
27	2	0·4	81	18·1	N	N	5·400	898·572	5·965	1004·404	,,	,,	0·565	105·832	10·5	11·8	500	Changed course to N 76° E, 8.34 a.m., Santa Elena Point S 56½° E.
28	1	59·0	81	12·3	N 76° E	N 76° E	6·000	904·572	6·606	1011·010	,,	,,	0·606	106·438	10·1	11·8	300	Changed course to S 81° E, 9.20 a.m., Santa Elena Point S 40° E.
29	2	2·8	81	3·3	S 81° E	S 65½° E	8·000	912·572	8·990	1020·000	,,	,,	0·990	107·428	12·4	11·8	100	**Final Splice** { Lighthouse bearing S 27½° E .... Mark Buoy 61 bearing S 6½° W ...... } Changed course to Curve.

SAN JUAN DEL SUR—SANTA ELENA SECTION—*continued.*

Commenced April 1*st*, 1893. *Completed May* 18*th*, 1893—continued.

No.	Positions. Lat. S.		Positions. Long. W.		Courses (True). Steered.	Courses (True). Made good.	Distances. Between Positions.	Distances. Total.	Cable paid out. Between Positions.	Cable paid out. Total.	Factory No.	Slack paid out. Between Positions.	Slack paid out. Total.	Slack %. Between Positions.	Slack %. Total.	Average Depth.	Remarks.
	°	′	°	′			N.M.	N.M.	N.M.	N.M.		N.M.	N.M.			fms.	
30	2	2·9	81	3·0	Curve	Curve	0·220	912·792	0·231	1020·231	L.I. (ex "Relay")	0·011	107·439	5·0	11·8	115	Changed course to S 60° E. Lighthouse bearing S 26° E; Mark Buoy 61 bearing S 51° W.
31	2	4·4	81	0·4	S 60° E	S 59½° E	3·050	915·842	3·385	1023·616	L.I. (ex "Relay")	0·335	107·774	10·9	11·8	30	Changed course to Curve. Lighthouse bearing S 12° E.
32	2	4·6	81	0·35	Curve	Curve	0·250	916·092	0·278	1023·894	L.I. (ex "Relay")	0·028	107·802	11·2	11·8	29½	Splice Light Intermediate—Light Intermediate. Lighthouse bearing S 13° E, 6·7 N.M. distant. Changed course to S 40½° E.
33	2	5·2	81	0·0	...	...	...	...	...	1024·872	L.I. 1951	...	...	...	...	26	Splice Heavy Intermediate—Light Intermediate. Lighthouse bearing S 11° E.
34	2	6·7	80	58·7	...	...	...	...	...	1026·862	H.I. 1952	...	...	...	...	18	Splice Shore - End — Heavy Intermediate. Lighthouse bearing S 3° W, 4·5 N.M. distant.
35	2	9·8	80	56·2	S 40½° E	S 39° E	6·700	922·792	6·962	1030·856	S.E. 1953B	0·262	108·064	3·9	11·7	9	Changed course to Curve. Lighthouse bearing S 61° W, 3·1 N.M. distant.
36	2	10·5	80	56·3	Curve	Curve	0·750	923·542	0·785	1031·641	,, ,,	0·035	108·099	4·7	11·7	9	Changed course to S 47° W. Lighthouse bearing S 73° W, 2·6 N.M. distant.
37	2	11·15	80	57·0	S 47° W	S 47° W	1·000	924·542	1·035	1032·676	,, ,,	0·035	108·134	3·5	11·7	6½	Ship's anchorage. Left Tangent Lighthouse Hill and Cable House < 44° 44′ 30″. Rocky Point and Cable House < 50° 53′. Rocky Point bearing S 6° E. Cable House bearing S 44½° W. Left Tangent Lighthouse Hill bearing W.
38	2	12·0	80	58·0	...	...	1·160	925·702	1·186	1033·862	,, ,,	0·026	108·160	...	11·7	...	**Cable Hut, Santa Elena, 1.4.93.**

POSITION SHEET.

SAN JUAN DEL SUR—SALINA CRUZ SECTION.

SAN JUAN DEL SUR—SALINA CRUZ SECTION.

Commenced April 24th. *Completed May 7th.*

No.	Positions.		Courses (True).		Distance.		Cable paid out.		Factory No.	Slack paid out.		Slack %.		Average Depth.	Remarks.	
	Lat. N.	Long. W.	Steered.	Made good.	Between Positions.	Total.	Between Positions.	Total.		Between Positions.	Total.	Between Positions.	Total.			
	° ′	° ′			N.M.	N.M.	N.M.	N.M.		N.M.	N.M.			fms.		
1	16 10·22	95 11·33	...	...	...	...	...	...	...	...	...	...	...	...	Salina Cruz Hut, 2.5.93.	
2	16 9·7	95 11·55	...	...	0·590	0·590	0·592	0·592	...	0·002	0·002	...	...	9¾	Ship's Anchorage	Morro de Salinas S 86° W. Morro Salinas Marqués S 63° W. Chipequa Point S 51° W. Cable Hut N 15° E.
3	16 9·57	95 11·58	Curve	Curve	0·138	0·728	0·138	0·730	...	...	0·002	...	...	11	On course S 5° E	Morro Salinas bearing W. Cerro Morro bearing N 76° E.
4	16 6·45	95 11·38	...	...	3·092	3·820	3·193	3·923	S.E. 1953B	0·101	0·103	3·2	2·7	16	Splice Shore-End —Heavy Intermediate	Cerro Morro bearing N 24° E. Morro Salinas Marqués N 67° W.
5	15 54·75	95 10·88	...	...	11·730	15·550	11·990	15 913	H.I. 1952 & 1952 A	0·260	0·363	2·2	2·3	80	Splice Heavy Intermediate—Light Intermediate	Mount Tecuani bearing N 20° W. Mount Conejo bearing N 38° W.
6	15 49·4	95 10·6	...	...	5·350	20·900	5·490	21·403	L.I. 1951	0 140	0·503	2·6	2·4	150	Splice Light Intermediate—Light Deep Sea	Mount Chipequa N 47° W. Cerro Morro N 1° E.

7	15	43·25	95	10·4	S 5° E	S 2½° E	6·120	27·020	6·253	27·656	L.D.S.	1235	0·133	0·636	2·1	2·35	200	Changed course to S 55° E, 4.50 p.m., 3.5.93.
8	15	35·5	95	1·9	...	...	...	...	...	38·679	,,	,,	...	...	...	...	180	Position by stars, 7 p.m., 3.5.93.
9	14	42·0	93	48·0	...	...	...	...	...	127·900	,,	,,	...	...	...	...	750	Changed tanks. Splice Light Deep Sea—Light Deep Sea, 11.28 a.m., 4.5.93.
10	14	41·4	93	46·1	...	S 52½° E	101·950	128·970	103·480	131·136	,,	,,	1·530	2·166	1·5	1·67	800	Observed noon, 4.5.93.
10▲	14	25·2	93	14·3	...	...	...	...	...	...	,,	,,	...	...	...	...	...	Approximate position by stars, 6.45 p.m., 4.5.93.
11	14	2·6	92	48·5	...	...	...	...	...	202·381	,,	,,	...	...	...	...	630	Splice Light Deep Sea—Light Deep Sea, 0.45 a.m., 5.5.93.
12	13	23·1	91	47·9	...	...	...	267·797	...	277·343	,,	,,	...	...	...	...	1100	Observed noon, 5.5.93.
13	13	21·8	91	45·5	S 55° E	S 55¾° E	141·500	270·470	149·164	280·300	,,	,,	7·664	9·830	5·4	3·63	1100	Changed course to S 70° E, 0.30 p.m., 5.5.93.
13▲	13	10·5	91	3·5	...	...	...	...	...	...	,,	,,	...	...	...	...	...	Approximate position by stars, 6.42 p.m., 5.5.93.
14	12	20·0	89	12·4	...	S 67½° E	161·550	432·020	178·251	458·551	,,	,,	16·701	26·531	10·33	6·14	1000	Observed noon 6.5.93.
15	12	7·0	88	26·8	...	...	...	...	...	512·356	,,	,,	...	...	...	...	850	Position by stars 6.30 p.m., 6.5.93.
16	11	58·9	87	59·1	S 70° E	S 74° E	74·700	506·720	83·923	542·474	,,	,,	9·223	35·754	12·3	7·05	850	Changed course to S 57° E, 10 p m., 6.5.93.
17	11	28·0	87	6·8	...	...	...	...	...	604·323	,,	,,	...	...	...	...	70	Changed tanks. Splice Light Deep Sea—Light Deep Sea, 5.55 a.m., 7.5.93.
18	11	5·5	86	29·5	...	...	...	609·470	...	647·508	,,	,,	...	...	...	...	94	Observed noon, 7.5.93.
19	11	1·6	86	20·2	S 57° E	S 59½° E	112·550	619·270	116·425	658·899	,,	,,	3·875	39·629	3·4	6·4	92	**Final Splice.** Changed course to N 60° E — Mount Papayal N 61° E. Mount Orosi S 86° E. High land Cape Elena S 73° E.
20	11	10·4	86	4·4	...	...	...	...	...	676·875	L.I.	1951	...	...	...	...	55	Splice Heavy Intermediate—Light Intermediate — Mount Orosi S 71° E. High land Cape Elena S 36° E. Mount Papayal N 61° E.

SAN JUAN DEL SUR—SALINA CRUZ SECTION—*continued.*

Commenced April 24th. *Completed May 27th.*

No.	Positions.		Courses (True).		Distances.		Cable paid out.		Factory No.	Slack paid out.		Slack °/₀.		Average Depth.	Remarks.
	Lat. N.	Long. W.	Steered.	Made good.	Between Positions.	Total.	Between Positions.	Total.		Between Positions.	Total.	Between Positions.	Total.		
	° ′	° ′			N.M.	N.M.	N.M.	N.M.		N.M.	N.M.			fms.	
21	11 15·02	85 55·95	...	...	...	...	...	686·365	H.I. 1952	...	...	...	...	30	Splice Shore-End—Heavy Intermediate { Lighthouse Hill S 85° E. Mount Papayal N 63° E.
22	11 15·12	85 55·79	N 60° E	N 59° E	26·050	645·320	27·652	686·551	S.E. 1953B	1·602	41·231	6·14	6·4	27	Changed course to N 80° E.
23	11 15·35	85 53·85	N 80° E	N 83° E	1·960	647·280	1·991	688·542	,, ,,	0·031	41·262	1·6	6·4	9	Changed course to Curve { Lot's Wife Rock N 26° W. No. 3 Point S 34° E.
24	11 15·22	85 53·72	Curve	Curve	0·180	647·460	0·227	688·769	,, ,,	0·047	41·309	20·6	6·4	9	Ship's Anchorage { Lot's Wife Rock and No. 2 Point <66° 16′. Cable House and No. 2 Point <56° 31′. Lot's Wife Rock bearing N 31° W. Lighthouse bearing S 52° E.
25	11 15·34	85 52·88	...	N 81½° E	0·840	684·300	0·844	689·613	,, ,,	0·004	41·313	...	6·4	...	Cable landing.
26	11 15·1	85 52·84	...	...	0·250	648·550	0·247 0·055	689·860 689·915	,, ,,	0·052	41·365	...	6·4	...	Splice on beach, Shore-End—Shore-End. **Cable Office, San Juan del Sur, 24.4.93.**

ELECTRICAL REPORT.

Electrical Particulars.

Conductor

7 Copper wires stranded
Diam: ea: wire = 0"·0285
" of strand = ("d") = 86·89 mils, or 0"·0869

Weight per N.m. = 107 lbs

Core

Coats Silvertown G.P.

Diam of core = ("D") = 276·2, or 0·276

Weight per N.m. = 140 lbs

$\text{Log}\ \frac{D}{d} = 0.5022$

Specific Conductor Res = 100% of that of pure copper
" Ind Cap = 0·1634
" " " (in terms of a cube knt) = 0·0599 mrfds
" Dielectric Res = 2003
" " " (in terms of a cube knt) = 5465^{-2}.

Specification.

Res at 75°F not to exceed not specified ohms per N.m.
Conductivity to be not less than 96% of pure copper.

Ind Cap not to exceed not specified mrfds per N.m.
Dielectric Res to be not less than 250 megohms at 75°F per N.m.

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GENERAL ELECTRICAL REPORT.

GENERAL ELECTRICAL REPORT.

SILVERTOWN, ESSEX,
January, 1894.

M. H. GRAY, ESQ.

DEAR SIR,

I beg to hand you the accompanying summary of cable operations in connection with the *Duplicate* cables recently laid by the S.S. "Silvertown" for the Central and South American Telegraph Company, between Chorrillos (Peru) and Salina Cruz (Mexico), and touching at the intermediate ports of Santa Elena (Ecuador) and San Juan (Nicaragua).

The electrical data of all sections shipped, and of the completed cables when laid, together with a comparison of tests before and after shipment, and before and after laying, soundings, bottom temperatures along the route of laying, and all other particulars of the cable shipped, laid, or otherwise expended, will be found embodied in tables annexed.

There is little, I think, calling for special comment, either in the electrical arrangements on board the "Silvertown," or in connection with the cable, the electrical tests of which were throughout wholly satisfactory.

In former reports I have remarked on the difficulty of speaking between the ship and the shore through very long lengths of cable, while the greater part is coiled in the ship's tanks, owing to the heavy rolling sometimes experienced. This fact again impressed me when paying out from Salina Cruz to San Juan with 1,696 knots of cable, having a conductor of only 107 lbs. per N.M. in circuit. Even when the rolling is only moderate, speaking becomes painfully slow, and, when excessive, reading is next to impossible.

In order, therefore, to simplify matters and economise time, a system of speaking between the ship and shore was resorted to viz. :— signalling only the number of an instruction, instead of the instruction

itself. For this object full and explicit instructions, and other useful conversation suitable to the work of cable laying and repairing, have been drawn up with a view to printing, and during the recent expedition were found to be of considerable service. In fact, the difficulty of speaking at times renders this imperative.

In the table giving the length of cable shipped and its expenditure it was found that the length of the Light Intermediate type actually shipped was in excess of the return made by the Factory Cable Department by 0·337 N.M. That this was the case is borne out by electrical tests, and also by the drum measurements when turned over and paid out.

When laying sections of considerable length between ports where steamers seldom call we had of necessity to depend very much on the staff of the Central and South American Telegraph Company for assistance in keeping watch on shore, and I am very pleased to have an opportunity of acknowledging the readiness with which our requirements were met by Mr. Kingsford and the friendliness and able assistance extended by all the station managers and the members of their staff during the progress of the cable work.

I am, dear Sir,

Yours faithfully,

JOHN RYMER-JONES.

CENTRAL AND SOUTH AMERICAN TELEGRAPH COMPANY'S DUPLICATE CABLES BETWEEN CHORRILLOS (PERU), SANTA ELENA (ECUADOR), SAN JUAN (NICARAGUA), AND SALINA CRUZ (MEXICO).

December, 1892, *to August*, 1893.

The construction of the above cable from August 4th to December 21st, 1892, was supervised by Mr. J. R. France on behalf of the Central and South American Company, assisted by Messrs. F. C. Crawford and J. Milne. The same gentlemen were present at the *final* tests which were made on each section before shipment by Messrs. H. E. Cann and J. Schneider, of the Submarine Electrical Department, and Messrs. Knox and Grafton, of the Cable Department.

The shipment into the "Silvertown's" tanks commenced December 14th, 1892, and was completed January 13th, 1893. The total length being as follows:—

	N.M.
For the C. & S. A. Tel. Co.'s Duplicate Cables—all types as spliced up on board	= 2622·169
For the C. & S. A. Tel. Co.'s repairing steamer "Relay"—Shore-End type	1·197
Cut off for splices during shipment	0·314
Length manufactured—of all types	= 2623·680
Additional *spare* cable shipped—Light Intermediate and Heavy Deep Sea types	5·0656
Total length of cable shipped	= 2628·7456

On January 15th, 16th, and 17th satisfactory tests were obtained on the cable in the main, after, and fore tanks respectively, by Mr. Schneider—Messrs. France and Crawford being present—the cable being covered with water at the time of testing.

During manufacture, out of 869 drums of core, only one (No. 172) was rejected, on account of imperfect electrification.

No cable huts were shipped as the cable ends were to be led either into the existing cable huts or directly into the stations.

Three complete sets of testing apparatus were provided to be used on shore during the laying.

"Articles" were signed on January 17th, and the following day the "Silvertown" dropped down the river to Greenhithe to take the remainder of her coal on board and adjust compasses.

At noon on January 22nd the staff joined the ship, which left the same afternoon for sea.

In addition to the members of the staff, the following gentlemen signed the ship's *Articles:* Messrs. J. Milne and H. Pescod, employées of the C. & S. A. Co., and also Messrs. W. Booth, J. H. Kay, Officers, and Mr. J. Beach, Second Engineer for the S.S. "Relay." Moreover, an arrangement has been made that Jointer Skinner, who was on his way out to relieve the Jointer of the "Relay," should act as assistant to the "Silvertown's" Jointer (Gowing) during the work of the expedition, and on its completion should join his own staff.

No representative of the C. & S. A. Co. accompanied the "Silvertown" on her outward voyage; the supervision of the cable work on the coast being entrusted to Mr. H. Kingsford, Electrician to the C. & S. A. Co., who was to join the ship at Callao.

Anchoring off the Nore Light for the night, the "Silvertown" proceeded next morning down channel, but had to put into St. Helen's Roads, Isle of Wight, at daylight, January 24th, for certain things requiring attention in the engine room. Soon after noon the same day she was able to continue her voyage, and arrived at Santa Cruz (Tenerife) early in the morning of February 1st.

Taking coals and provisions on board delayed her here some eleven hours, when she was again put on her course.

The dates of her arrival at and departure from the different ports on her outward voyage between Tenerife and Callao are as follows :—

Arrived at	St. Vincent	Feb. 5; 9.25 A.M.	Left:	Feb. 5; 4.45 P.M.
,,	F. de Noronha	,, 11; 11.53 P.M.	,,	,, 11; 7.15 ,,
,,	Sandy Point	,, 27; 11.15 ,,	,,	Mar. 1; 4.0 A.M.
,,	Glacier Bay	Mar. 1; 5.0 ,,	,,	,, 2; 4.0 ,,
,,	Coronel	,, 8; 6.30 A.M.	,,	,, 12; 4.15 ,,
,,	Valparaiso	,, 13; 10.15 ,,	,,	,, 14; 2.0 P.M.
,,	Callao	,, 20; 11.15 ,,		

During the outward passage daily tests were obtained on the cable when practicable. Owing to the mean draught of the ship

being 28′ 1″ the cable could not safely be kept under water. The cable in each tank was therefore flushed daily for ten minutes, and the accumulating water run off every few days.

On February 12th and 13th water was pumped into the after and main tanks, and satisfactory tests obtained when the cable was wholly covered with water.

On February 20th the "Silvertown" shipped a heavy sea, which carried away her port surf boat, and broke the glass covering of the steam steering gear aft, and flooded both saloons, engine room, and store room. When the "Silvertown" arrived at Valparaiso (March 13th) Messrs. M. H. Gray and Cazalet, who had gone forward from Coronel by train, rejoined the ship; and also Messrs. J. Rymer-Jones and F. W. A. Knight, who had received instructions to proceed from Monte Video to Valparaiso, and there await the arrival of the "Silvertown."

At Callao, Mr. H. Kingsford joined the ship as representative of the C. & S. A. Tel. Co., and during the cable work was assisted by Mr. Howard.

As the repairing steamer "Relay" was at the time lying in port, Mr. Kingsford arranged with Captain Lugar to take over from the "Silvertown" the 1·197 N.M. of Shore-End type brought out for his ship. This piece of cable was therefore, after testing, coiled down into a barge (March 21st), well watered and covered with canvas and taken to the S.S. "Relay." A copy of the *final* test on March 20th, and the Factory electrical values of all coils entering into the Section (3 C), were at the time handed to Mr. Kingsford.

On March 21st, satisfactory tests were obtained on the whole of the cable in the tanks, in the presence of Mr. Kingsford, to whom copies were given of the results. This same day, Mr. Gray left Callao for Panama, per P.S.N.C. steamer "Aconcagua," leaving Captain Hunter, R.N., in charge of the cable-laying.

Soundings for the *Shore-End* were made off Chorrillos, on the 23rd, by the "Silvertown," which afterwards took up a position in 6 fms., intending to land the end next morning.

Distance of ship from water's edge	=	1·123 N.M.
„ from water's edge to Hut	=	·024 „
„ of ship from Cable Hut	=	1·147

By 6 p.m., March 24th, the end had been landed, and the ship

started to pay out the remainder of the Shore Section which was completed by 1.43 a.m. on the 25th, and the end buoyed in 137 fms., flag R. Total length paid out = 32·971 N.M.

The Light Intermediate of this section contains a kink made during shipment. This was examined and tested at the time and passed as unimportant. While paying out the control test showed no indications of weakness. The position of this kink is at 9·151 N.M. from the splice with the Heavy Intermediate type.

After placing a mark buoy in 460 fms., the "Silvertown" returned to Callao to coal. While so occupied, satisfactory tests were made (March 25th) on the Shore Section from Chorrillos Hut by Mr. Rymer-Jones.

1st min. Z, total = $207{\cdot}5^{\Omega}$: per N.M. = $6841{\cdot}^{\Omega}$ at sea temperature.

A copy of this test was at the time handed to Mr. Kingsford.

During the ship's absence Mr. Kingsford kindly arranged with Mr. Walker, of the C. & S. A. Co.'s staff, to test the Chorrillos Shore Section daily.

Early on March 27th the "Silvertown" left Callao, sounding *en route* to Santa Elena, where she arrived, soon after daylight, on the 31st.

For soundings taken along the proposed route of cable *see* Appendix.

Testing instruments were landed without delay, and set up by Mr. Schneider, who, assisted by Mr. Knight, was to remain in charge of the testing work on shore while the Santa Elena—Chorrillos Main Cable was being laid.

To relieve them in keeping watch, Mr. Kingsford asked Mr. Ripley —the Station Manager—to put his services at Mr. Schneider's disposal, which he kindly agreed to do.

As food supplies were very limited at the Station and the Santa Elena town, ten miles or so distant, provisions had to be sent on shore for the staff.

In addition to the three underground lines between the Station and Cable Hut (a distance of about 320 yards), two of which were in use for working the existing cables, Mr. Ripley to-day (March 31st) completed the first of three other underground cables to be used for the new cables. As tests showed this new line (No. 4) to have an insulation resistance of 733 megs. per knot it was decided to make a

permanent joint at the Cable Hut, between this line and the cable end when landed; and make the Station, instead of the Hut, the controlling station on shore. The old *spare* underground line (No. 3) afforded an efficient earth lead; the end at the hut being soldered to all the inner sheathing wires of the cable—the outer wires also being cleaned and lapped tightly with several turns of galvanized iron wire.

While these arrangements were being carried out on shore, the ship was occupied during the day taking some additional soundings off Santa Elena, returning to her anchorage off Eusenada Hut at nightfall.

As the Santa Elena Northern Shore Section had to be landed and laid before proceeding with the section south to Chorrillos, this Northern Shore Section was tested in the presence of Mr. Kingsford, who received copies of the test, and also the electrical values in factory of the coils employed in its manufacture.

Length = 9·980 N.M. D.R. 1st min. Z total = 68·13$^{\Omega}$: per N.M. = 679·9 : red. to 75° = 822·3$^{\Omega}$.

During the forenoon, April 1st, the Santa Elena Northern Shore Section was landed. As the end reached only one yard above the Cable Hut floor two additional yards of core were joined to it.

While landing the end the "Silvertown" was anchored in 6 fms.

Distance of ship from shore .. .. { By observation = 1·16 N.M.
{ " cable = 1·186 "

Depth of cable in trench between the water's edge and hut is 3½ to 4 feet.

The remainder of this shore section was laid the same evening, and the end of the Light Intermediate type buoyed in 30 fms.; after which the "Silvertown" returned to her anchorage off the Cable Hut. A test on this section after laying, by Mr. Schneider, gave the following result:—

Capacity total = 3·005 mfd's.: per N.M. = 0·301 mfd.
D.R. 1st min. Z total = 125·3$^{\Omega}$ " 1251·$^{\Omega}$ at sea temp.

Tests on the spliced 1243·783 N.M. of cable in the after tank, including the Santa Elena Southern Shore Section and the main cable to be laid from Santa Elena to Chorrillos, proving satisfactory, the top end (Shore-End type) was sealed in readiness for landing the next

morning. A copy of this test was handed to Mr. Kingsford, who had been present during the test.

C.R. total = 13809·76 : per N.M. = 11·103 units.
D.R. 1st min. Z total = 1·79$^{\Omega}$,, 8 = 2230$^{\Omega}$: red. to 75° = 1775$^{\Omega}$.

The following tests were obtained by Mr. Schneider on the three new underground lines laid by Mr. Ripley :—

No.	Date when laid.	D.R. total.	C.R. total.	Capacity total.	Remarks.
4	Mar. 31st	1453·$^{\Omega}$	1·95$^{\omega}$	0·05 mfd.	Distance in a straight line from Cable Hut to Station = 320 yds.
5	April 1st	2150·	1·97	0·05 ,,	
6	,, ,,	1483·	1·96	0·05 ,,	

Mr. Kingsford received a telegram on April 1st from Mr. Walker, at Barranco, saying :—" A pontoon restaurant has anchored in Chorrillos, bearing from Hut N 27° W, Office N 32° E, with about 40 fms. of chain towards Point. Have advised them they are on cables. Shall we do anything further or await return ?" A later telegram said :— " Bearings true, craft small, heavy chain, but wants take up position permanently. No damage likely at present, but possible inconvenience."

On April 2nd, the " Silvertown " took up her position, in 6½ fms. off the Cable Hut, to land the Santa Elena Southern Shore Section.

Distance of ship from shore, by observation ..	=	0·900 N.M.
,, ,, to water's edge, by cable measurement	=	0·919 ,,
,, ,, from water's edge to Hut	=	0·087 ,,
,, ,, ,, ship to cable ,, ...		1·006 ,,

In order not to expose the Northern Shore-End already in the trench, a new trench was opened close to the Northern Shore-End.

Before noon the end had been taken into the Hut, and was there jointed to underground line No. 5 (recently laid) in order to be able to test from the station while paying out the main cable—No. 4 underground line, connected at the Hut with all the sheathing wires of both cables, being used for an " earth."

At 3.23 p.m., April 2nd, the ship started paying out towards Chorrillos. The usual control test with 80 (Leclanché) cells being kept permanently on the cable, and the current momentarily increased to 108 cells, in order to give the Shore Station the ship's time at 8 a.m. and at 8 p.m., a signal was exchanged with the Santa Elena Station every 5 minutes, and the testing current reversed every hour. Results of the insulation test at the 1st, 5th, 30th min., and at the full hour, were supplied to Mr. Kingsford as the laying proceeded. The total length in circuit = 1243·783 N.M.

Paying out continued without hitch or interruption; and at 9.10 a.m., April 7th, the "Silvertown" arrived at the buoy on the *Chorrillos Shore Section.*

This was picked up and tested with the following result:—Length = 32·966 N.M.

C.R.	total		= $357{\cdot}0^{\omega}$:	per N.M. = $10{\cdot}829^{\omega}$:	calc. temp. 60° F.
D.R.	1st min Z	total	= $114{\cdot}6^{\Omega}$	,, = $3780{\cdot}^{\Omega}$	
,,	5th ,,	,,	= 157·6	,, = 5197·	

After cutting the *main cable*, the following result was obtained:—

C.R.	total		= $7920{\cdot}4^{\omega}$	per N.M. = $10{\cdot}322^{\omega}$:	calc. temp. 37½° F.
D.R.	1st min. Z	total	= $18{\cdot}41^{\Omega}$	,, = 14126·	Length = 767·342 N.M.
,,	5th ,,	,,	= 255·9	,, = 196360·	

On slipping the bight-splice, at 2.13 p.m., April 7th, the ship proceeded to Callao, where the following results of tests by Mr. Schneider, from Santa Elena Station, were received.

"3 p.m. Results of first test on *Santa Elena—Chorrillos Section* after completion." [Length = 800·281 N.M.]

C.R. total mean	Z = $8259{\cdot}^{\omega}$	C. = $8243{\cdot}^{\omega}$	
D.R. 1st min. Z total	= $19{\cdot}0^{\Omega}$		Both currents agree well; tests satisfactory throughout.
5th ,, ,,	= 39·5		
30th ,, ,,	= 66·9		

Also the following results on the *Santa Elena Northern Shore Section*—

"*D.R.* total 1st min. Z = $141{\cdot}^{\Omega}$. Test satisfactory". Length = 9·980 N.M.

The Factory electrical data at 75° F. of the completed Santa Elena—Chorrillos cable, the length of the various types, the position of splices and coils, &c., &c., a copy of which was handed to Mr. Kingsford, will be found annexed.

The following are the results of tests by Mr. J Rymer-Jones on the *Santa Elena—Chorrillos Section* from Chorrillos Hut, April 8th, when Mr. Kingsford was present. [Length = 800·281 N.M.]

C.R. measured total	= 8248·7$^{\omega}$:	per N.M. = 10·307$^{\omega}$:	calc. temp. = 36½° F.	
D.R. 1st min. Z total	= 19·121$^{\Omega}$	„ = 15302·$^{\Omega}$	At sea temp.	
5th „ „	= 41·862	„ = 33502.	„	
15th „ „	= 58·279	„ = 46640·	„	

Note.—The cable only between the two huts was in circuit, the joint with the underground line at Santa Elena Hut being cut for this test.

Mr. Schneider was instructed to test this cable daily from Santa Elena Station, *i.e.*, through the underground line, taking 15 minutes with each current and discharging for one hour between the two tests.

The following Light Intermediate type was, on April 10th, taken out of the S.S. "Relay" in order to carry the Santa Elena Northern Shore Section (now buoyed in 29½ fms.) beyond the 100-fm. line of soundings—

Type.	Length N.M.	C.R. at 75° F.		Capacity.		D.R. at 75° F.	
		Total.	Per N.M.	Total.	Per N.M.	Total.	Per N.M.
Light Intermediate	3·935	44·048	11·194	1·445	·3672	90·47	356·

Note.—This cable was received from the "Relay," as 4·000 N.M. When paid out it was carefully measured and found to be 0·065 N.M. less than was supposed. It is part of 9·000 N.M. supplied to the "Relay" from the Silvertown Factory, March 10th, 1890. Part of this had been expended and the remaining 5·817 N.M., from which the above cable was cut, has never (Mr. Kingsford believes) been shifted from the bottom of the "Relay's" tank, where it was originally coiled at Silvertown in March, 1890.

Before leaving Callao for Santa Elena (April 12th) a message was sent to Mr. Schneider at Santa Elena from Capt. Hunter, saying:

"Please note should interruption of old cable take place I have arranged that the traffic should be worked through our cables except when tests are necessary."

At daylight, April 16th, the mark buoy was picked up off Santa Elena, and at 8 a.m. the same day the "Silvertown" dropped anchor off Santa Elena Station.

Daily tests by Mr. Schneider from Santa Elena on the *Santa Elena—*

Chorrillos cable had given very regular results ranging from a total *D.R.* for the 1st min. Z, of 18·72 to 19·56 megs., the last test made.

Daily tests on the *Santa Elena Northern Shore Section* showed that the insulation had remained practically the same as when tested on April 2nd, the day after laying.

D.R. 1st min. Z total, April 2nd = 125·3$^{\Omega}$: April 16th = 130·97$^{\Omega}$.

Readings had been quite steady and the electrification regular.

In order to test the Santa Elena Northern Shore Section daily from the station, a permanent joint was made between it and No. 6 underground line.

The end at the station was, however, temporarily sealed while the ship was employed splicing on and laying into deeper water the additional 3·935 N.M. of Light Intermediate type, lately received from the "Relay."

As Messrs. Schneider and Knight were required for the cable work north of Santa Elena, Mr. Kingsford arranged that Mr. Ripley (the Station Manager), at Santa Elena, and Mr. Walker, at Chorrillos, should continue the tests on the Santa Elena—Chorillos completed section alternately from their respective ends during the ship's absence; and that Mr. Ripley should also take occasional tests on the Northern Shore Section during the ship's absence.

After placing a mark buoy, No. 61, with a lamp on it as a guide when paying out, the seaward end of the *Santa Elena Northern Shore Section* was taken on board; and as the insulation test gave a satisfactory result, viz., *D.R.* 1st min. Z total=128·2$^{\Omega}$, a splice was made and the 3·935 N.M. of additional Light Intermediate cable, ex "Relay," paid out; the end being buoyed, shortly before midnight, April 16th, in 126 fms. Buoy No. 42, flag R.

Total length of the Santa Elena Northern Shore Section = 14·061 N.M.

After slipping the buoy, the "Silvertown" picked up buoys, No. 52 (flag M), and No. 51 (flag B), and took the lamps from mark buoy No. 61 (blue flag), when she proceeded north to San Juan del Sur (Nicaragua), sounding *en route*—*see* list of soundings over proposed route of Santa Elena—San Juan Cable in Appendix.

On nearing San Juan, 3.22 p.m., April 22nd, a mark buoy (No. 51 H) with a *dioptric* lamp on it was placed in 92 fms., and at 8 p.m. the same

evening the "Silvertown" arrived off San Juan, but, owing to there being no light at the lighthouse, did not attempt to enter the harbour till next morning.

As there was a stiff breeze blowing, accompanied with rain, it was found impracticable to land the Shore-End to-day (April 23rd). The following morning, however, the "Silvertown" succeeded in doing so.

Distance of ship from the *spider-wheel* on beach, by observation = 0·84 N.M.
" " " " " cable = 0·844 "
" from *spider-wheel* to the station (along the trench) = 0·212 "

Total length paid out by the ship's drum measurement = 1·036 N.M. at the time when the shore signalled "Enough cable."

The end was carried from the point of landing (*spider-wheel*) to the Telegraph Station by the ship's hands and natives, who laid the cable in the trench, a distance of 430 yards. As it was found that the cable end was too short to reach to the Station, more cable was heaved ashore, the ship raising her anchor and altering her position slightly.

For a short time the control test readings became unsteady. This was found to be due to the considerable length of cable carried along the beach and then suddenly laid in the water, the difference in the electro-static charge under the two conditions being sufficient to account for it, and the readings, when the cable was undisturbed, were perfectly steady as before.

When the cable had been straightened out along the beach it was found that the end was still 55 fms. too short to reach to the telegraph station. It was, therefore, decided to pay out the remainder of the San Juan Northern Shore Section, ex main tank, at daylight, April 25th, and after buoying the Seaward End to return to San Juan, and splice on a short additional length of Shore-End type to reach to the station. This was accordingly done, the Seaward End of the Light-Intermediate type being buoyed in 92 fms.:—Buoy No. 52, flag W. Length laid = 30·980 N.M.

The remaining 4·000 N.M. of the Light Intermediate type was cut off this section to replace the 3·935 N.M. obtained from the S.S. "Relay" on April 10th.

Tests on this section (34·980 N.M.), before laying and cutting, gave:—

C.R. measured total = 395·02 : per N.M. = 11·293 units : calc. temp. = $79\frac{1}{2}$°.F.
D.R. 1st min. Z " = 23.37 : " = 817$^{\Omega}$: red. to 75°F. = 1151$^{\Omega}$.

A copy of this test, and also insulation values every half hour while paying out, handed to Mr. Kingsford.

On the ship's return to San Juan the same evening, 65 fms. of Shore-End type were cut from the top end of the Salina Cruz Shore Section in the fore tank to be spliced to the San Juan Northern Shore-End on the beach, in order to reach to the Telegraph Station. A 5-fm. splice was made on the beach, and, to insure more perfect contact between wires for a good "earth," the butt ends of all wires of the splice (both inner and outer sheathings) were served with an extra long lapping—about 4 inches long—of binding wire.

The end, for about 3 ft. above the floor, at the Station has its double sheathing intact; the inner sheathing wires extending another foot beyond.

For the "earth" a 7-strand copper wire is soldered to every wire of both sheathings. Beyond the inner sheathing the core extends for 7 ft. of which $3\frac{1}{2}$ ft. has its serving on, and is lapped with tape. Another 18 inches or so are lapped with felt, and also cotton tape; while for the remaining 18 inches the gutta-percha is left bare.

Total length of the San Juan Northern Shore Section, when through to the Station = 31·030 N.M.

Where the cable is laid along the beach over some loose rocks of an old pier, it had not been able to sink; and a fathom length was found exposed at low water. This part of the cable Mr. Holmann—the "Silvertown" Company's Agent—undertook to have buried at least 2 ft. at daylight on the morrow (April 26th), before the sun could injure it.

As it was not intended to leave any member of the "Silvertown's" staff at present at San Juan, Mr. Kingsford kindly arranged with Mr. Atherton (the Station Manager) to test the San Juan Northern Shore Section during the ship's absence.

The above shore work concluded, the "Silvertown" left San Juan for Salina Cruz, and, on her way north, made the series of soundings along the proposed route of the cable given in the Appendix; and turned over the 4·000 N.M. of Light Intermediate for the "Relay" from the main tank into the starboard fore pocket, to get it out of the way.

The day before reaching Salina Cruz (April 29th) the bottom end

[Light Deep Sea, Pt. Sec. 10] of the top spliced section in the fore tank [127·936 N.M.], and the top end of [Light Deep Sea, Pt. Sec. 11] the spliced Light Deep Sea in the after tank [476·441 N.M.] were tested, and a 14-fm. splice made between them.

A test on *Light Deep Sea in the after tank* [476·441 N.M.] before splicing gave :—

D.R. 1st min. Z total = 2·372Ω : per N.M. = 1130·Ω. : red. to 75° F. = 1419·Ω.

After splicing, the sections in the fore and after tanks were tested in the presence of Mr. Kingsford. Length = 604·353 N.M.

D.R. 1st min. Z total = 1·875 : per N.M. = 1133· : red. to 75° F. = 1536·Ω.

Tests were also to-day (April 29th) made on the remaining sections on board, in the presence of Mr. Kingsford, to whom copies were given.

Date.	Tank.	Length. N.M.	C.R. measured.		Calc. Temp.	D.R. at Tank Temp.		Reduced to 75° F. per N.M.
			Total.	Per N.M.		Total.	Per N.M.	
April 29	Fore ..	80·858	912·605	11·286	78°	10·559	853·8	1073·
„ 29	Main ..	1091·667	12147·7	11·127	73°	1·518	1657·	1423·

On April 30th, at daylight, the "Silvertown" dropped anchor off Salina Cruz, and during the forenoon sent ashore the *spider-wheels* and other gear for heaving the cable end ashore; and all electrical apparatus. These had to be landed at the "Port," it being impossible to land nearer to the Cable Hut owing to the heavy breakers. It was, however, found to be impracticable to land the Shore-End that day, as the native surf-boat and men were not provided as had been promised.

Mr. Raymond-Barker remained in charge of the Cable Hut, while laying the cable, assisted by Mr. Willmott-Dixon, and also by Mr. West, the Station Manager, who put his services at Mr. Barker's disposal.

On account of the distance of the Hut from the Station, and from any source of supplies, which are moreover limited and expensive, it was necessary to land from the ship provisions for three weeks, bedding,

&c., &c., for the use of the "Silvertown's" staff employed at the Hut, while laying the cable.

Distance from the *Port* to the Cable Hut is about one mile.
" " Station " two miles.
" Station to the Cable Hut " two miles.

As the old Station had been removed, and the Hut was the only accommodation available, Mr. West had been instructed to erect a covering on poles over the Cable Hut, leaving an air-space of two or three feet, and to make the covering to overlap the eaves by about six feet. This was done in order to make the Hut more habitable, as the heat is very great during the day, owing to there being no *match-boarding* over the corrugated iron sides of the house, and consequently no air-space between the two, as is the case with the "Silvertown" Huts now constructed.

As the assistance of the native surf-boat could not be secured, Messrs. Robinson and Lumsden attempted to land a line across the surf on May 1st by means of the line-throwing apparatus. It had also been arranged that one of the natives should try to swim out from the shore with a line to the surf-boat which was to anchor outside of the breakers. When the native was about to make the attempt, the surf-boat, with five cable hands and Mr. Lumsden in charge, approached too near to the breakers and the boat was capsized. Of the occupants three cable hands succeeded in reaching the shore very much exhausted, and one was picked up by the steam-launch, which at considerable risk steamed as close to the breakers as was possible to render assistance; but the remaining two, Mr. Lumsden and William Armes (cable hand), could not be found. It would be quite out of place to dwell on this sudden and terrible calamity which called forth the deepest feelings of regret and sympathy of every one of their shipmates; but it would not be proper to dismiss the mention of this painful accident without gratefully recording the universal expressions of sympathy and most generous response made to the fund for the family of William Armes by the members of the C. & S. A. Tel. Co.'s staff at every one of the stations, both in the Gulf of Mexico and on the Pacific coast.

The following morning, May 2nd, Mr. Robinson succeeded at the third trial in getting a line on shore by means of a gun firing a light line from the steam-launch, which steamed close in towards the breakers

before firing. By 4.24 p.m. the end of the cable had been landed and laid in its trench, about five feet deep; but owing to the difficulty in getting the cable balloon buoys and other gear from the shore, the "Silvertown" did not leave till noon on May 3rd, when she started paying out towards San Juan.

Distance of ship from shore when landing the cable end by observation	=	0·59 N.M.
" " " " " cable	=	0·518 "

A test before landing the end gave for the 604·354 N.M. in circuit.

D.R. 1st min. Z total = 1·6$^{\Omega}$: per N.M. = 967·$^{\Omega}$: red. to 75° F. = 13616$^{\Omega}$.

Another test by Mr. Raymond-Barker, on May 3rd, from Salina Cruz Hut gave:—

D.R. 1st min. Z total = 1·69$^{\Omega}$ before starting to pay out after landing the end.

The usual system of continuity and insulation control test was kept on the cable continuously night and day while paying out, the result of the 1st, 5th, 30th, and 60th minute of each hour being supplied to Mr. Kingsford.

At 11.28 a.m., May 4th, all the cable had been paid out from the fore tank, and a change was made to the after tank.

On May 6th the spliced Light Deep Sea in the main tank [1091·667 N.M.] was tested in the presence of Mr. Kingsford, who received a copy:—

D.R. 1st min. Z total = 1·279$^{\Omega}$: per N.M. = 1397$^{\Omega}$: red. to 75° = 1507$^{\Omega}$

Before splicing this last length [1091·667 N.M.] to the section then running out from the after tank, continuity signals were tried, and it was found that charging 2 mfds. at the Salina Cruz Hut from the cable charged with 80 Leclanché cells, produced scarcely any visible effect on the ship's galvanometer. It was arranged, therefore, that Salina Cruz Hut should put the end of the cable to "earth" through 100000·ω instead of using the condenser.

The very long length in circuit [1696·008 N.M.] of such light core [107 lbs. copper and 140 lbs. gutta-percha] 1100 knots of which was coiled in the tanks, made signals very small and very trying to read—in fact when the ship rolled heavily it was scarcely possible to read at all.

At 5.42 a.m., May 7th, a change was made to the main tank from after tank, the whole of the cable in the latter tank being paid out.

By noon the buoy on the San Juan Northern Shore Section was sighted, the end being taken on board at 1.25 p.m.

Tests to San Juan Station. Length=31·016 N.M. :—

C.R. total =339·85 : per N.M.=10·957 : calc. temp. = 64° F.
D.R. 1st min. *Z* total =89·89Ω ,, =2788 : red. to 75.°F. = 1208Ω.

At Mr. Kingsford's request the following comparison of tests on the San Juan Northern Shore Section was furnished :—

Comparison of Tests on the *San Juan Northern Shore Section.*

Date, 1893.	Length in Circuit. N.M.	Temperature.		C.R. Measured.		D.R. Measured.			Remarks.
		Calc.	Obs.	Total.	Per N.M.	Total.	Per N.M.	Reduced to 75° F.	
		°	°	ω	ω	Ω		Ω	
Jan. 15	34·980	38½	39	391·721	11·192	487·96	17080·	1065·	After shipment.
April 8	,,	75	72	391·12	11·181	34·84	1219·	1219·	At Callao.
,, 13	,,	75	72	391·22	11·184	35·49	1241·	1241·	At Sea.
,, 17	,,	71½	74	391·12	11·181	34·58	1209·	1164·	*En route* to San Juan
,, 18	,,	74½	74	391·22	11·184	35·40	1238·	1192·	,, ,,
,, 20	,,	76½	74	392·72	11·227	29·19	1021·	1144·	,, ,,
,, 21	,,	77½	74½	393·62	11·253	25·321	885·7	1071·	,, ,,
,, 22	,,	79	74	394·72	11·284	24·55	858·6	1164·	,, ,,
,, 24	,,	79½	74½	395·02	11·293	23·37	817·4	1151·	At anchor at San Juan.
,, 24	,,	79½	74½	395·02	11·293	23·66	827·7	1165·	At anchor before landing end.
May 7	31·030	64	...	339·85	10·957	89·89	2788·	1208·	Before splicing to Shore-End Sec.

After cutting, and before splicing, tests to Salina Cruz [=658·92 N.M.] gave :—

C.R. total =6864·3ω : per N.M.=10·41 ω : calc. temp. = 41°·5 F.
D.R. 1st min. *Z* total=16·80Ω : ,, =11069·Ω { Readings regular and satisfactory.

Note.—A copy of this test was handed to Mr. Kingsford.

After making the final splice the bight was slipped in 92 fms., and the "Silvertown" set on for San Juan.

At daylight, May 8th, the "Silvertown" anchored off San Juan, and on members of the staff landing they found that since our last visit, the town had, without fighting, been taken possession of by the

revolutionary party. No opposition or inconvenience, however, arose from this change.

The following results were received from Mr. Raymond-Barker, who had been instructed to test the Salina Cruz—San Juan cable from Salina Cruz as soon as the bight splice had been slipped :—

C.R. total	$=7203{\cdot}5^{\omega}$:	corrected for temp. $= 7246{\cdot}7^{\omega}$:		
	Length $= 689{\cdot}914$ N.M.			
D.R. 1st min. Z total	$=14{\cdot}42^{\Omega}$:	1st min. C total $=13{\cdot}94^{\Omega}$		
5 ,, ,,	$=22{\cdot}44$:	5 ,, ,, $=20{\cdot}19$	}	Earth current fluctuating.
30 ,, ,,	$=29{\cdot}77$:	30 ,, ,, $=27.62$	}	

For the Factory electrical values at 75° F. of all sections entering into the Salina Cruz—San Juan cable, the types, position of splices, a comparison of tests on this cable, &c., &c., *see* Appendix.

As San Juan will be the controlling station while laying, the San Juan—Santa Elena cable testing apparatus was landed and set up in a room adjoining the office by Mr. Schneider, who remained on shore in charge of the testing work, being assisted by Mr. Knight, of the "Silvertown" staff, and Mr. Atherton, the Station Manager, who kindly offered to take a watch.

Tests by Mr. Rymer-Jones, on the San Juan—Santa Elena Cable, May 8th ; Mr. Kingsford present.

C.R. total arithmetic mean $=7195{\cdot}4^{\omega}$:	corr. for temp. $=7244{\cdot}^{\omega}$:	per N.M. $=10{\cdot}500^{\omega}$	
,, harmonic ,, $=7174{\cdot}$:	,, $=7222{\cdot}$:	,, $=10{\cdot}468$	
D.R. ,, 1st min. $Z=16{\cdot}40^{\Omega}$:	per N.M. $=11315{\cdot}^{\Omega}$	}	—Length $=689{\cdot}910$ N.M. —
,, ,, $C=16{\cdot}68$:	,, $=11506{\cdot}$	}	

Tests by Mr. Kingsford [2nd test] on May 9th gave :—

C.R. by slide resistances at 83° F.	$=7232{\cdot}47^{\omega}$	Corrected for temp. $=7244{\cdot}6^{\omega}$	
,, reproducing the mean slide value	$=7193{\cdot}$	,, ,, $=7234{\cdot}$	
Capacity (Gott's method)	$=225{\cdot}4$ mfds. :	per N.M. $={\cdot}3267$ mfd.	
,, ,, Factory value	$=224{\cdot}21$,,	,, $={\cdot}325$,,	
D.R. 1st min. Z total	$= 14{\cdot}771^{\Omega}$:	per N.M. $= 10191{\cdot}^{\Omega}$	
,, ,, C ,,	$= 14{\cdot}01$	,, $= 9666{\cdot}$	

Another test on the above cable on May 10th :—

Capacity (Gott's method) by Mr. Schneider. Corrected		$= 227{\cdot}3$ mfds.	
,, Factory value		$= 224{\cdot}2$,,	
D.R.—1st test by Mr. Kingsford.	Total 1st min.	$Z = 14{\cdot}124^{\Omega}$	with 18 cells.
,, 2nd ,,	,, { ,,	$Z = 14{\cdot}274$ }	,, 72 ,,
	,,	$C = 14{\cdot}67$ }	

Another test on the above cable, on May 11th, by Mr. Kingsford:—

C.R., by slides, mean of 18 readings. Corrected for temp. = 7244·$^{\omega}$
,, reproducing the mean slide value ,, ,, = 7206·
Capacity (Gott's method) 4 secs. charge. Corrected = 232·5 : per N.M. = ·337 mfd.
,, ,, 10 ,, ,, = 232·6 ,, = ·337 ,,
D.R.—Total 1st min. Z = 13·857$^{\Omega}$: per N.M. = 9560·$^{\Omega}$
,, ,, ,, C = 14·092 : ,, = 9722·

Note.—The standard of comparison for the above capacity tests was 3 condensers, by Elliott, having a combined capacity of 59·8 mfds.

On May 9th a splice was made between the 30·888 N.M. of Light Intermediate, Heavy Intermediate, and Shore-End in the fore tank, and 1037·061 N.M. of Light Deep Sea in the main tank—the Light Intermediate being joined to Light Deep Sea, pt. sec. 10; after which the Light Intermediate, Heavy Intermediate, and Shore-End types were turned over, in the order named, from the fore tank on to the top of the Light Deep Sea in the main tank, making a total length of 1067·949 N.M.

Before splicing, tests on these sections gave:—

Tank.	Type.	Length N.M.	Dielec. Resistance.
Fore	L.I., H.I., & S.E.	30·888	D.R. 1st min. Z total = 7·971$^{\Omega}$ per N.M.
,,	L.D.S., Pt. 11A*	49·970	= 644·5$^{\Omega}$ red. to 75° = 1140$^{\Omega}$
Main	L.D.S.	1037·061	D.R. 1st min. Z total = 1·391$^{\Omega}$ per N.M. = 1443·$^{\Omega}$ red. to 75° = 1498·5$^{\Omega}$.

Turning over the 30·888 N.M. from the fore into the main tank showed that the Light Intermediate type was longer by 0·301 N.M. than the length given by the Factory Cable Department, the paying-out drum measuring this Section 22·287 N.M. instead of 21·986 N.M. This difference closely agrees with the length of core in the "Section" book, viz.: 22·337 N.M., and has therefore been taken as correct, evidently this Section was *run* out and not *cut out* at 22·000 N.M.

* This piece in the fore tank was left joined up with the spliced Light Intermediate, Heavy Intermediate, and Shore-End when the test was made, otherwise the deflection would have been too small to obtain a reliable insulation value.

The total length in circuit after splicing up ready to pay out from San Juan to Santa Elena = 1C67·938 N.M.

The San Juan Southern Shore-End was landed on May 12th, as follows:—

A length of 350 fms. of the Shore-End type, ex main tank, to reach from the point of landing, where the spider-wheel was placed, to the Station, was coiled down into a lighter, but no cut was made; the intention being to heave the bight on shore from the lighter, anchored as close inshore as possible, and then pay out the remainder from the lighter, in tow of the steam-launch, around the Bay to a point in front of the Station; and thence lay the end in the trench across the beach to the Station.

With her 350 fms. on board the lighter was hauled towards the shore and cable paid out from the ship—balloon buoys being attached at intervals as usual—and the end was successfully landed in the manner explained above.

Distance of Ship from the spider-wheel on Shore	=	0·73 N.M.
" " to the Station by Chart approx.	=	0·85 "

Total paid out while ship at anchor:—

Including about 0·347 N.M. in Lighter	=	0·988 N.M.
Cut off (surplus in Station) 69 fathoms*	=	·068 "
Length of Shore-End type between Ship and Station	=	·920 "

The treatment of the Core at the Cable-End in the Hut and the nature of the "earth" provided by the sheathing wires is the same as already described when dealing with the San Juan Northern Shore-End.

Test on the 1067·938 N.M. of cable in circuit, May 12th, before landing the end.

D.R. 1st min. Z total = 1·219 $^{\Omega}$: per N.M. 1302· $^{\Omega}$: red. to 75° F. = 1352· $^{\Omega}$.

Test by Mr. Schneider after landing the Shore-End:—

D.R. 1st min. Z total = 1·32 $^{\Omega}$: 5th min. = 1·42 $^{\Omega}$.

The "Silvertown" started paying out from San Juan at 6.18 p.m.,

* The 69 fms. cut off the end, are buried in the trench with the Shore-End, at Mr. Kingsford's suggestion.

May 12th, and arrived at the buoy on the Santa Elena Shore Section at 10.16 a.m., May 18th.

No noteworthy incident happened during the laying, which, from beginning to end, was without a hitch of any kind.

The D.R. values of the cable for the 1st, 5th, 30th, and 60th mins. of each hour, as shown by the control test, were supplied to Mr. Kingsford as the laying proceeded.

On taking the end of the *S.L. Northern Shore-End* on board 30 fms. (damaged) were cut off, and the following results obtained when tested :—

C.R. mean total = 155·075 : per N.M. = 11·179 $^{\omega}$: length = 14·031 N.M.
D.R. 1st min. Z „ = 76·194 : „ = 1069· $^{\Omega}$ at 73° F.

After cutting the main cable, a test from the ship to San Juan Station—1020·367 N.M.—gave :—

C.R. mean total = 10520·8 $^{\omega}$: per N.M. = 10·311 : calc. temp. = 37° F.
D.R. 1st min. Z total = 14·724 $^{\Omega}$: „ = 15023.

The *final* splice was accordingly made and slipped at 2.4 p.m., May 18th, thus completing the last of the three sections.

For the Factory electrical values at 75° F. of the different types which enter into this cable—the position of splices—a comparison of tests before and after shipment, and before and after laying, &c., &c., *see* Appendix.

Santa Elena was reached the same afternoon (May 18th), and the following results of tests, obtained by Mr. Schneider from San Juan Station, were received. Length = 1034·357 N.M., including the underground line [0·58 N.M.] at Santa Elena :—

	Length N.M.	C.R. measured.		Calc. Temp. Fah.	D.R. at Sea Temp.		Remarks.
		Total. ω	Per N.M. ω		Total. Ω	Per N.M. Ω	
Length in circuit ...	1034·357	10593·00	...	...	14·20	...	Both currents agreeing well.
S.L. Underground line	·158	3·92	...	...	1483·	...	
S.L. San Juan cable	1034·199	10589·08	10·24	33·7	14·34	14826·	

Note.—Underground lines Nos. 4 and 6 used for C.R., and No. 6 only for D.R.

While at Santa Elena Mr. Kingsford obtained the following results:—

Test on *Santa Elena—San Juan Section*, May 19th. Length = 1034·199 N.M.

C.R. by *slides*, harmonic mean, corrected for temp. Total = 10699·6$^{\omega}$: per N.M. = 10·344 calc. temp. 38·3° F.

Standard of comparison 10000ω by Elliott, No. 1952.

C.R. by *slides*, reproducing balance by substituting resistance coils for cable. Total = 10683$^{\omega}$ per N.M. = 10·330$^{\omega}$, calc. temp. 37½° F.

Capacity (by Gott's method). Total = 339·3 : per N.M. = ·3281 mfd.

„ Factory value „ = 337·85 „ = ·3367 „

Standard of comparison, 2 condensers by Elliott, total capacity = 40·53 mfds.

D.R. 1st min. Z total = 12·232$^{\Omega}$: per N.M. = 12652·$^{\Omega}$: Impt. $^{\circ}/_{\circ}$ between 1st and 5th mins. = 105·3.

D.R. 1st min. C total = 13·148$^{\Omega}$: per N.M. = 13600·$^{\Omega}$: Impt. $^{\circ}/_{\circ}$ between 1st and 5th mins. = 110·4.

Test on *Santa Elena—Chorrillos Section*, May 19th. Length = 800·281 N.M.

C.R. by *slides*, harmonic mean, corrected for temp. : total = 8293·$^{\omega}$ per N.M. = 10·362$^{\omega}$: calc. temp. 39°·2 F.

Standard of comparison 10000ω by Elliott, No. 1952.

C.R. by *slides*, reproducing balance by substituting resistance coils for cable. Total = 8270$^{\omega}$, : per N.M. = 10·334$^{\omega}$: calc. temp. 37°·9 F.

Capacity (by Gott's method). Total = 263·29. per N.M. = 0·329 mfd.

„ „ Factory value „ = 260·49 „ = 0·3255 „

Standard of comparison, 2 condensers by Elliott, total capacity = 40·53 mfds.

D.R. 1st min. Z total = 18·509$^{\Omega}$: per N.M. = 14812·$^{\Omega}$: Impt. $^{\circ}/_{\circ}$ between 1st and 5th mins. = 117·1.

D.R. 1st min. C total = 18·522 : per N.M. = 14822·$^{\Omega}$: Impt. $^{\circ}/_{\circ}$ between 1st and 5th mins. = 125·5.

Test on *Santa Elena—San Juan—Salina Cruz Sections*, May 19th. Length = 1724·124 N.M.

C.R. by *slides*, harmonic mean, corrected for temp. : total = 17940·8$^{\omega}$: per N.M. = 10·404$^{\omega}$: calc. temp. 41°·0 F.

C.R. by *slides*, balance reproduced by resistance coils, corrected for temp. : total = 17902·$^{\omega}$: per N.M. = 10·383ω : calc. temp. 39°·7 F.

D.R. 1st min. Z total = 6·444Ω : per N.M. = 11111$^{\Omega}$: Impt. $^{\circ}/_{\circ}$ between 1st and 5th mins. = 92·4.

D.R. 1st min. C total = 6·309$^{\Omega}$: per N.M. = 1087·9$^{\Omega}$: Impt. $^{\circ}/_{\circ}$ between 1st and 5th mins. = 89·78.

Before leaving Santa Elena an instruction was sent to Mr. Schneider to test the Santa Elena—San Juan Section daily. Mr. Raymond-

Barker having similar instructions with regard to the Salina Cruz—San Juan Cable.

All testing apparatus was brought away, as Mr. Kingsford decided to take his final tests at Chorrillos, the guarantee expiring on May 28th, that is ten days from the completion of the last San Juan—Santa Elena Section.

At daylight, May 20th, the "Silvertown" left Santa Elena for Callao, but returned to anchorage in order to effect a small repair in her engine room.

Taking advantage of the delay, Mr. Kingsford again tested the *Santa Elena—Chorrillos cable* to verify results obtained by Mr. Walker from Chorrillos Hut and by himself, on May 19th, from Santa Elena Station. This test (2nd test) gave:—

D.R. 1st min.: Z total = 17·89$^{\Omega}$: per N.M. = 14315·$^{\Omega}$: at sea temp.: Impt. % 1st and 5th min.: 126·2.

D.R. 1st min.: C total = 16·98$^{\Omega}$: per N.M. = 13586·$^{\Omega}$: at sea temp.: Impt. % 1st and 5th min.: 162·0.

On May 21st the "Silvertown" finally left Santa Elena for Callao.

It was proposed to take soundings off Talara *en route* to Callao and ascertain the specific gravity of the bottom water at a few miles from land, where the 1882 cable has frequently been broken—so often, indeed, as to necessitate its diversion further seawards, as much as 14½ knots from shore—its present position. A theory exists that the altitude of the Andes inland may supply the pressure for springs of water welling up from the bottom, which bottom is found to change its depth from 565 fms. at 6 knots from shore to 1256 fms. at 12 knots distant.

The cable was first laid at 10½ knots from Talara Point. The zone where trouble has been experienced so far has been at about 2½ knots to the east and west of this position. The idea, however, of making soundings in this locality had, however, to be abandoned.

As it was intended to lay the surplus new cable belonging to the C. & S. A. Tel. Co. in some position where it will be easily accessible whenever the "Relay" may require it, the 47·421 N.M. of Light Deep Sea type, pt. sec. 7, in the main tank, was spliced to the 49·970 N.M. of Light Deep Sea, pt. 11 A, in the fore tank.

Tests before splicing, May 23rd, gave, for these two sections D.R. values :—

L.D.S., pt.7 = 47·421 N.M. : D.R. 1st min. : Z total = 67·85 Ω : per N.M. = 3217·5 Ω at 69° = 2039· Ω at 75° F.

L.D.S., 11A. = 49·970 N.M. : D.R. 1st min.: Z total = 74 43 Ω : per N.M. = 3719·5 Ω at 69° = 2357· Ω at 75° F.

After making a 14-fms. splice between these two sections, the whole length, 97·373 N.M., was tested, May 25th, and gave :—

D.R. 1st min. Z total = 38·41 Ω : per N.M. = 3740· Ω at 67° : red. to 75° F. = 2035·5 Ω

On arriving at Callao, May 24th, it was found that the 1882 Chorrillos—Payta cable was interrupted, and that the C. & S. A. Tel. Co. was using the new Chorrillos—Santa Elena cable, as had been agreed upon.

Owing to the interruption and the traffic requiring the use of the new cable from six a.m. until midnight, Mr. Rymer-Jones agreed to Mr. Kingsford's proposal to test the new duplicate cables between midnight and six a.m. each night until the expiration of the ten days' guarantee.

The 4·000 N.M. of Light Intermediate type, pt. sec. 2, was coiled into a barge, May 25th, and sent the same day to the S.S. "Relay" to replace the 3·935 N.M. received from her on April 10th. A copy of the last test, together with the factory 75° values of this cable, was handed to Mr. Kingsford.

C.R. mean total = 43·389 ω : per N.M. = 10·847 ω units : calc. temp. $65\frac{1}{2}$° F.
D.R. 1st min. Z total = 663·5 Ω ,, = 2660· Ω at $65\frac{1}{2}$° F.

FACTORY VALUES OF LIGHT INTERMEDIATE TYPE SENT ON BOARD S.S. "RELAY."

Type.	Sec.	Factory No.	Order of Coils	Length.		C.R. at 75° F. ω		Capacity.		D.R. at 75° F. Ω		—
				As Core.	Sheathed.	Total.	Per N.M.	Total.	Per N.M.	Total.	Per N.M.	
L.I.	Pt. 2	1951	Pt. 356	0·6037	...	6·712	...	0·195	...	942·	...	Top end on board "Relay."
			,, 352	3·0207	...	33·574	...	0·980	...	209·	...	
			,, 365	0·3553	...	3·967	...	0·116	...	1568·	...	Bottom end on board "Relay."
				3·9797	4·000	44·253	11·063	1·291	·323	154·2	616·8	

The following results were obtained by Mr. Kingsford from Chorrillos Hut on the *Chorrillos—Santa Elena—San Juan cables* joined together = 1834·48 N.M.

1*st Test*, 0.57 p.m., May 26th:—

			Z total		per N.M.	Impt. %.
D.R.	1st min.	Z total	=6·579 Ω	: per N.M.	=12069· Ω	164·4
,,	5th ,,	,,	=17·396	: ,,	=31912·	
,,	1st ,,	C ,,	=7·248 Ω	: ,,	=13296·	162·5
,,	5th ,,	,,	=19·036	: ,,	=34921·	

2*nd Test*, 2.34 p.m.:—

			Z total		per N.M.	Impt. %.
D.R.	1st min.	Z total	=6·313 Ω	: per N.M.	=11580· Ω	198·2
,,	5th ,,	,,	=18·828	: ,,	=34535·	
,,	1st ,,	C ,,	=6·782 Ω	: ,,	=12442·	186·8
,,	5th ,,	,,	=19·449	: ,,	=35678·	

The mean of nine tests made by Messrs. Schneider and Barker on the *Salina Cruz—San Juan cable*, May 15th to 25th, gave:—

			Z total		per N.M.	Impt. %.
D.R.	1st min.	Z total	=13·40Ω	: per N.M.	=9244·8Ω	52·5
,,	5th ,,	,,	=20·44	: ,,	=14102·	
,,	1st ,,	C ,,	=13·23 Ω	: ,,	=9127·5	49·66
,,	5th ,,	,,	=19·80	: ,,	=13660·	

The mean of seven tests by Mr. Schneider from San Juan on the *San Juan—Santa Elena cable* = 1034·199 N.M.

			Z total		per N.M.	Impt. %.
D.R.	1st min.	Z total	= 12·9Ω	: per N.M.	=13341·Ω	101·6
,,	5th ,,	,,		,,	=26900·	
,,	1st ,,	C ,,	= 13·3Ω	: ,,	=13755·	124·1
,,	5th ,,	,,	= 29·8	,,	=30829·	

The mean of three tests by Mr. Atherton, Station Manager at San Juan, on the *San Juan—Santa Elena cable*, May 26th.

			Z total		per F.M.	Impt. %.
D.R.	1st min.	Z total	=12·09Ω	: per F.M.	=12504·Ω	129·7
,,	5th ,,	,,	=27·77	: ,,	=28720·	
,,	1st ,,	C ,,	=12·93Ω	: ,,	=13372·	137·4
,,	5th ,,	,,	=30·7	: ,,	=31750·	

Jointer Skinner signed off the "Silvertown's" *Articles*, May 26th, in order to join the S.S. "Relay." The same day Mr. Rymer-Jones

received orders to leave the "Silvertown," and go to Vera Cruz and Galveston in order to report to London the condition of the *duplex* apparatus at those stations.

Tests from Chorrillos Hut by Mr. Kingsford:—

	Date.	Time.	Section.	Length N.M.	D.R. Zinc. Ω		Impt. per cent.	D.R. Carb. Ω		Impt. per cent.
					1st Min.	5th Min.		1st Min.	5th Min.	
	May 26	11 P.M.	Chorrillos to Santa Elena	800·281	20·122	51·866	157·8	20·804		
1st Test	,, 27	1 A.M.	Chorrillos to Salina Cruz	2524·394	2·938	8·7386	...	2·733	8·831	
2nd ,,	,, 27	2 A.M.	Chorrillos to Salina Cruz	2524·394	2·519	8·705	...	2·566		
3rd ,,	,, 27	11 P.M.	Chorrillos to Santa Elena	800·281	20·24	46·00	127·3	18·88	48·19	155·2
1st ,,	,, 28	0.3 A.M.	Chorrillos to Salina Cruz	2524·394	2·545	9·434	270·7	2·667	8·696	226·1
2nd ,,	,, 28	1.10 A.M	Chorrillos to Salina Cruz	2524·394	2·825	9·434	232·9	2·660	8·620	224·1

Tests by Mr. Atherton from San Juan Station:—

	Date.	Time.	Section.	Length. N.M.	D.R. Zinc. Ω		Impt. per cent.	D.R. Carb. Ω		Impt. per cent.
					1st Min.	5th Min.		1st Min.	5th Min.	
1st Test	May 27	11 A.M.	San Juan to Salina Cruz	689·914	12·6	17·4	38·10	11·4	17·0	49·12
2nd ,,	,, 27	to	San Juan to Salina Cruz	689·914	12·1	16·2	33·89	12·0	17·7	47·5
3rd ,,	,, 27	2.30.P.M.	San Juan to Salina Cruz	689·914	12·5	20·7	65·60	12·0	19·6	63·33

Test by Mr. Schneider, May 28th, San Juan—Salina Cruz = 689·914 N.M.:—

C.R. mean of C and Z total = 7168·5$^{\omega}$: corrected for temp. = 7195·4$^{\omega}$: per N.M. = 10·429$^{\omega}$.

			Impt. %			Impt. %
D.R.	1st min. Z total	= 13·13 Ω	54·6	1st min. C total	= 13·21 Ω	55·18
,,	5th ,, ,,	= 20·3		5th ,, ,,	= 20·5	
,,	10th ,, ,,	= 22·48		10th ,, ,,	= 22·48	

Test by Mr. Schneider, May 28th, *San Juan—Santa Elena* = 1034·199 N.M.

C.R. mean of C and Z total = 10564·$^\omega$: corrected for temp. = 10604·$^\omega$: per N.M. = 10·253$^\omega$.

D.R. 1st min. Z total = 13·37$^\Omega$ } Impt. °/ₒ 105·7   1st min. C total = 13·15$^\Omega$ } Impt. °/ₒ 106·84
„ 5th „ „ = 27·5   5th „ „ = 27·2
„ 10th „ „ = 32·7   10th „ „ = 33·4

"Tests on both sections quite satisfactory; readings regular and compare well. Earth current moderate. Schneider.'

Final tests made by Mr. Kingsford from Chorrillos Hut.

	Date.	Time.	Section.	Length. N.M.	D.R. Zinc. Ω 1st Min.	D.R. Zinc. Ω 5th Min.	Impt. per cent.	D.R. Carbon. Ω 1st Min.	D.R. Carbon. Ω 5th Min.	Impt. per cent.
1st Test	May 28	0·53 P.M.	Chorrillos—Santa Elena—San Juan	...	6·643	19·220	189·3	6·462	15·12	134·0
2nd „	„ 28	1·56 „ / 2·22 „	Chorrillos—Santa Elena—San Juan	...	6·380	21·581	238·2	Not taken.		

Note.—The carbon current was kept on till 2.22 p.m., the time when the guarantee of ten days expired. This was calculated from the time of slipping the final splice of the San Juan—Santa Elena cable, the last section completed.

The following mean results of tests were handed to Mr. Kingsford before the "Silvertown" left Callao.

Chorrillos—Santa Elena Section. Length = 800·281 N.M.

C.R. total obsd. = 8293·$^\omega$: per N.M. = 10·362$^\omega$.
Capacity total corrected, 263·29: per N.M. = ·329 mfd.
Temp. mean obsd. of sea bottom = 38°·64 F. } *Depth* (mean) = 1085· fms.
„ „ calcd. from Mr. Kingsford's *C.R.* test = 39°·2 F.
D.R. total 1st min. Z = 19·34$^\Omega$, C = 19·22$^\Omega$ } mean of 5 tests.
„ „ 5th „ „ = 46·74 „ = 47·94
„ 1st min. mean of Z and C = 19·28$^\Omega$: per N.M. = 15480·$^\Omega$* } Impt.°/ₒ = 145·5.
„ 5th „ „ „ „ = 47·34 „ = 38008·

* *D.R.* given by Mr. Kingsford in the certificate = 14818·Ω per N.M.

Santa Elena—San Juan Section. Length = 1034·199 N.M.

C.R. obsd. total = 10699·6$^{\omega}$ per N.M. = 10·344$^{\omega}$ units.
Capacity „ corrected = 339·33 : per N.M. = ·328 mfd.
Temp., mean obsd., of sea bottom = 36°·8 F. } *Depth* (mean) =
„ „ calcd. from Mr. Kingsford's C.R. test = 38°·3 F. } 1489· fms.

D.R. total 1st min. Z = 12·62$^{\Omega}$: C. = 13·19$^{\Omega}$ } mean of 11 tests.
„ 5th „ = 26·41 „ = 29·79 }

D.R. 1st min. mean of Z & C total = 12·90 $^{\Omega}$: per N.M. = 13343·$^{\Omega}$ * } Impt. °/$_{\circ}$—
5th „ „ = 28·10 : „ = 29064· } 118·6

San Juan—Salina Cruz Section. Length = 689·914 N.M.

C.R. obsd. total = 7244·6$^{\omega}$: per N.M. = 10·500$^{\omega}$ units.
Capacity „ corrected = 234·06 : per N.M. = ·339 mfd.
Temp., mean obsd., of sea bottom .. .. = 43°·61 F. } *Depth* (mean)
„ „ calcd. from Mr. Kingsford's C.R. test = 45°·0 F. } = 596· fms.
D.R. total 1st min. Z = 13·41 $^{\Omega}$: C. = 13·43 $^{\Omega}$ } mean of 15 tests.
„ 5th „ = 20·02 .. = 19·75 }
„ 1st min. mean of Z & C total = 13·422 $^{\Omega}$: per N.M. = 9260·$^{\Omega}$ † } Impt. %
„ 5th „ „ = 19·88 „ = 13718· } 48·14

Test on the *surplus Light Deep Sea cable* [pt. secs. 7 and 11 A spliced together] in the fore and main tanks before sealing the top end in the fore tank ready to lay in the position selected for this spare cable. Length = 97·373 N.M.

C.R. mean total = 1066·67$^{\omega}$: per N.M. = 10·955$^{\omega}$: calcd. temp. 65½·° F.
D.R. 1st min. Z total = 46·16$^{\Omega}$ „ = 4495·$^{\Omega}$: red. to 75° F. = 2183· $^{\Omega}$

The Factory values at 75° F. for this section are:—

Tank.	Type.	Factory.	Section.	Order of Coils.	Length N.M.	C.R. at 75° F. ω Total.	C.R. at 75° F. ω Per N.M.	Capacity. Total.	Capacity. Per N.M.	D.R. at 75° F. Ω Total.	D.R. at 75° F. Ω Per N.M.
Fore	L.D.S.	1235·B	11 A	757–Pt. 853	49·952	559·345	11·200	15·647	·3132	19·507	974·4
Main	„	1235·	Pt. 7	Pt. 699–834	47·421	529·176	11·159	15·126	·3190	22·104	1048·2
					97·373	1088·521	11·179	30·773	·3160	10·362	1009·0

* D.R. given by Mr. Kingsford in the certificate = 13126·$^{\Omega}$ per N.M.
† D.R. given by Mr. Kingsford in the certificate = 9314·$^{\Omega}$ per N.M.

A certificate accepting the cables was received from Mr. Kingsford by Captain Hunter, on May 29th, and the following morning, before daylight, the "Silvertown" left Callao homeward bound.

Paying out Spare Cable.

At 8.20 a.m. May 30th, the end of Light Deep Shore, pt. 11 A, was paid out overboard from the fore tank in 26 fms. of water. A mushroom, but no buoy, was attached. Leaden label, marked "L.D S. Sec. 11 A." attached to the end.

Bearings { Solar Point .. .. N 72° E.
Herradada .. .. N 35° W.
Chorrillos Point .. N 40° E.

While paying out, a control test was kept on the cable, the current being reversed every hour. At 3.30 p.m., sec. 11 A, had all run out, and a change was made to the main tank, pt. sec. 7.

By 10.30 p.m., the last end had passed overboard in 83' fms. of water. A leaden label marked "L.D.S., Pt. 7," was attached to the end, but no mushroom or buoy. Average depth along route of cable = 100 fms.

Bearings { Ballista Island .. E.
San Gallan [R. Tangent] S 29° E.

Total cable returned to the "Silvertown" works:—

Type.	Factory No.	Section.	Length N.M.	Remarks.
L.I.	944·	Pt. 3 B.	} 2·8013	} Remaining in the port after-pocket, where first shipped. Not touched during voyage.
"	1175·	Pt. 4 A, 9 and 11 A		
H.D.S.b.	1236·	Pt. 6	2·2643	
			5·0656	

The testing instruments, including the batteries used at Santa Elena, were returned to the works in the "Silvertown," while those from San Juan and Salina Cruz were shipped to London by way of the

Straits of Magellan, with the exception of the batteries, which were, by arrangement with Mr. Kingsford, left at the stations and taken over by the C. & S. A. Tel. Co.

Messrs. Schneider and Knight returned to England from San Juan, *viâ* Panama and New York, and Messrs. Barker and Dixon from Salina Cruz by way of San Francisco and New York.

Mr. J. Rymer-Jones had to leave the "Silvertown" at Callao, having received instructions to proceed to Vera Cruz and Galveston, and report on the Duplex apparatus of the Mexican Telegraph Company.

The electrical work, while laying the surplus Light Deep Sea cable off Chorrillos, was, therefore, conducted by Mr. J. F. Coote, who alone of the electrical staff remained on board.

The dates of the "Silvertown's" arrival at and departure from the different ports on her homeward voyage are as follows:—

Arrived off	Coronel	June	7,	11.45 A.M.	Left June	13,	4.20 P.M.
,,	Sandy Point	,,	21,	6.30 P.M.	,,	22,	10.15 A.M.
,,	Fernando da Noronha,	July	10,	8.55 ,,	Left July	11,	0.45 ,,
,,	St. Vincent	,,	17,	5.50 A.M.	,,	17,	0.45 P.M.
,,	Santa Cruz—Tenerife	,,	22,	6.50 ,,	,,	22,	0.33 ,,
,,	Gravesend—Thames	Aug.	1,	2.45 P.M.			

On the homeward passage, between June 28th and July 1st, some soundings were taken between the River Plate and Rio de Janeiro.

JOHN RYMER-JONES,

Electrician.

DISTRIBUTION OF CABLE IN TANKS ON BOARD S.S. "SILVERTOWN."

DISTRIBUTION OF CABLE IN TANKS ON BOARD S.S. "SILVERTOWN."

After Tank.

Level				N.M.
A 1 Top	S.E.	1953B	pt. sec. 3B=	6·000
	H.I.	1952	pt. sec. 3=	3·490
	L.I.	1951	pt. sec. 2=	1·990
	L.D.S.	1235	pt. sec. 10=	64·979
	L.D.S.	1235	sec. 6=	419·570
	L.D.S.	1235	sec. 11=	345·794
A 1 Bott.	L.D.S.	1235	sec. 9=	401·961

Ends (top to bottom): pt. 506; pt. 502, pt. 421; pt. 453, pt. 248; pt. 248, 37; pt. 156, 39; pt. 864, 8; 764, 3; 813

Main Tank.

Level				N.M.
M 4 Top	S.E.	1953B	sec. 3C=	1·197
M 4 Bott. / M 3 Top	S.E.	1953B	pt. sec. 3B=	7·000
	H.I.	1952	pt. sec. 3=	1·990
	L.I.	1951	pt. sec. 2=	0·990
M 3 Bott. / M 2 Top	S.E.	1953B	pt. sec. 3B=	3·500
	H.I.	1952	pt. sec. 3=	9·490
	L.I.	1951	pt. sec. 2=	21·990
M 2 Bott. / M 1 Top	L.D.S.	1235	pt. sec. 10=	260·000
	L.D.S.	1235	sec. 5=	416·067
M 1 Bott.	L.D.S.	1235	sec. 7=	415·600

Ends (top to bottom): 738; 738, pt. 502; pt. 503, pt. 453; pt. 453, pt. 248; pt. 301, pt. 503; pt. 501, pt. 453; pt. 459, pt. 304; pt. 356, pt. 156; pt. 711, 6; 863, 4; 834

Fore Tank.

Level				N.M.
F 4 Top	S.E.	1953B	pt. sec. 3B=	7·500
	H.I.	1952	pt. sec. 3=	3·490
	L.I.	1951	pt. sec. 2=	21·986
F 4 Bott. / F 3 Top	S.E.	1953B	pt. sec. 3B=	4·000
	H.I.	{1952 / 1952A}	pt. sec. 3 and 3A} =	11·990
	L.I.	1951	pt. sec. 2=	5·490
	L.D.S.	1235	pt. sec. 10=	106·520
F 3 Bott. / F 2 Top	L.I.	1951	pt. sec. 2=	22·323
	H.I.	1952A	pt. sec. 3A=	4·990
	S.E.	1953B	pt. sec 3B=	3·500
F 2 Bott. / F 1 Top	L.D.S.	1235B	sec. 11A=	49·970
F 1 Bott.				

Ends (top to bottom): 509; pt. 506, 418; pt. 421, 207; pt. 248, pt. 501; pt. 500, pt. 459; pt. 463, pt. 301; pt. 304, pt. 711; pt. 482, pt. 356; pt. 482, pt. 463; pt. 614, pt. 500; pt. 499, 757; pt. 853

Port After-pocket.

			N.M.
L.I. No. 944	pt. sec.	3B =	} 2·8013
,, ,, 1178	,,	4A, 9A, 11A =	}
H.D.S.B 1236	pt. sec.	6 =	2·2643
			5·0656 N.M.

VALUES AT 75° F. OF CABLE ON BOARD S.S. "SILVERTOWN."

VALUES AT 75° F. OF SECTIONS ON BOARD S.S. "SILVERTOWN."

FORE TANK.

Section.	Type.	Factory No.	Length as Core. N.M.	Length as Cable. N.M.	C.R. at 75° F. Total.	C.R. at 75° F. Per N.M.	Capacity. Total.	Capacity. Per N.M.	D.R. at 75° F. Total.	D.R. at 75° F. Per N.M.	Reciprocals of Total D.R.
Pt. 3B	S.E.	1953B	7·4858	7·500	83·789	11·172	2·1884	·2918	43·9	329	·022767
Pt. 3	H.I.	1952	3·4738	3·490	39·390	11·287	1·1307	·3240	310	1085	·003220
Pt. 2	L.I.	1951	21·8595	21·986	245·510	11·167	7·2097	·3279	42·7	939	·023441
			32·8191	32·976	368·689	11·180	10·5288	·3193	20·2	666	·049428
Pt. 3B	S.E.	1953B	3·9810	4·000	44·831	11·208	1·1653	·2913	90·35	361	·011068
Pt. 3 and Pt. 3A	H.I.	1952 & 19 2A	11·9703	11·990	134·606	11·227	3·9054	·3257	89·38	1072	·011183
Pt. 2	L.I.	1951	5·4574	5·490	61·493	11·201	1·7531	·3193	157·2	865	·006363
Pt. 10	L.D.S.	1235	106·4752	106·520	1191·743	11·188	33·4457	·3140	8·859	944	·112880
			127·8839	128·000	1432·673	11·192	40·2695	·3146	7·067	905	·141499

Pt. 2	L.I.	1951	22·1596	22·323	250·933	11·241	7·2635	·3524	40·78	911	·024522
Pt. 3	H.I.	1952A	4·978	4·990	56·055	11·232	1·6181	·3242	216·4	1080	·004621
Pt. 3B	S.E.	1953B	3·484	3·500	39·183	11·195	1·0543	·2970	120·0	421	·008330
			30·6216	30·813	346·171	11·235	9·9359	·3225	26·69	822	·037473
11A	L.D.S.	1235B	49·9215	49·970	559·543	11·200	15·6528	·3132	19·51	975	·051282
Total of Tank			241·2461	241·759	2707·076	11·200	76·3870	·3160	3·576	865	·279682

VALUES AT 75° F. OF SECTIONS ON BOARD S.S. "SILVERTOWN."

Main Tank.

Section.	Type.	Factory No.	Length as Core.	Length as Cable.	C.R. at 75° F.		Capacity.		D.R. at 75° F.		Reciprocals of Total D.R.
			N.M.	N.M.	Total.	Per N.M.	Total.	Per N.M.	Total.	Per N.M.	
3c	S.E.	1953B	1·199	1·199	13·388	11·165	0·3467	·2891	391·	468·	·002557
Pt. 3B	S.E.	1953B	6·9342	7·000	78·799	11·257	2·0791	·2970	55·4	388·	·018066
Pt. 3	H.I.	1952	1·9829	1·990	22·266	11·188	0·6371	·3201	552·	1098·	·001809
Pt. 2	L.I.	1951	0·9829	0·990	11·071	11·182	0·3166	·3198	960·	950·	·001041
			9·9000	9·980	112·136	11·237	3·0328	·3029	47·8	477·	·020916
Pt. 3B	S.E.	1953B	3·4839	3·500	39·225	11·207	1·0361	·2960	105·9	371·	·009464
Pt. 3	H.I.	1952	9·4500	9·490	106·427	11·215	3·0467	·3210	106·3	1010·	·009405
Pt. 2	L.I.	1951	21·8782	21·990	245·816	11·179	7·0756	·3218	33·04	727·	·030263
			34·8121	34·980	391·468	11·191	11·1584	·3190	20·36	712·	·049132

Pt. 10	L.D.S.	1235	260·0300	260·000	2903·627	11·168	85·3067	·3281	3·717	966·	·269034
5	L.D.S.	1235	415·9902	416·067	4646·000	11·166	135·7479	·3263	2·491	1037·	·401445
7	L.D.S.	1235	415·3163	415·600	4645·170	11·177	135·7854	·3267	2·590	1076·	·386100
			1091·3365	1091·667	12194·797	11·171	356·8400	·3269	0·946	1033·	1·056579
Total of Tank.......			1137·2458	1137·826	12711·789	11·172	371·3779	·3264	0·885	1007·	1·129184

After Tank.

Pt. 3B	S.E.	1953B	5·9852	6·000	66·886	11·147	1·7796	·2966	60·7	364·	·016465
Pt. 3	H.I.	1952	3·4813	3·490	39·116	11·208	1·1357	·3254	278·	973·	·003595
Pt. 2	L.I.	1951	1·9790	1·990	22·116	11·114	0·6408	·3220	525·	1050·	·001905
Pt. 10	L.D.S.	1235	64·9690	64·979	723·937	11·141	21·3928	·3292	22·	1430·	·045454
6	L.D.S.	1235	419·4670	419·570	4686·821	11·170	136·0264	·3242	2·423	1017·	·412711
11	L.D.S.	1235	345·5350	345·794	3868·120	11·186	113·2678	·3276	2·941	1016·	·340020
9	L.D.S.	1235	401·6499	401·930	4493·542	11·179	131·7107	·3277	2·647	1063·	·377786
Total of Tank			1243·0664	1243·783	13900·538	11·176	405·9538	·3264	0·835	1039·	1·197936

VALUES AT 75° F. OF SECTIONS ON BOARD S.S. "SILVERTOWN."

GRAND TOTAL.

	Lengths N.M.		C.R. at 75° F.		Capacity.		D.R. at 75° F.		Reciprocals of Abs. D.R.
	Core.	Cable.	Total.	Per N.M.	Total.	Per N.M.	Abs.	Per N.M.	
Fore	241·2461	241·759	2707·076	11·199	76·3870	·3160	3·576	865	·279682
Main	1137·2458	1137·826	12711·789	11·170	371·3779	·3264	·885	1007	1·129184
After	1243·0664	1243·783	13900·538	11·176	405·9538	·3264	·835	1039	1·197936
	2621·5583	2623·368	29319·403	11·178	853·7187	·3254	·384	1007	2·606802

VALUES AT 75° F. OF COMPLETED SECTIONS.

SANTA ELENA—CHORRILLOS SECTION.

VALUES AT 75° OF COMPLETED SECTION.

Type.	Section.	Factory No.	Length. N.M.	Order of Coils.	C.R. at 75° F. ω Total.	C.R. Per N.M.	Capacity. Total.	Capacity. Per N.M.	D.R. at 75° F. Ω Total.	D.R. Per N.M.	Splices.
SANTA ELENA END.											
S.E.	Pt. 3B	1953B	6·000	Pt. 506—Pt. 502	66·886	11·147	1·7796	·2966	60·7	364·	
				↙							Factory, Jan. 11, 1893.
H.I.	Pt. 3	1952	3·490	Pt. 421—Pt. 453	39·116	11·208	1·1357	·3254	278·	973·	
				↙							Factory, Jan. 10, 1893.
L.I.	Pt. 2	1951	1·990	Pt. 248—Pt 248	22·116	11·114	0·6408	·3220	525·	1050·	
				↙							Factory, Jan. 11, 1893.
L.D.S.	Pt. 10	1235	64·979	37—Pt. 156	723·937	11·141	21·3928	·3292	22·0	1430·	
				↙							Factory, Jan. 11, 1893.
L.D.S.	6	1235	419·570	39—Pt. 864	4686·821	11·170	136·0264	·3242	2·423	1017·	
				↙							Factory, Dec. 28, 1892.
L.D.S.	Pt. 11	1235	271·286	8—76	3030·325	11·170	88·9920	·3280	3·7765	1024·5	
				↙ ↗							"Silvertown" Bight Splice, April 7, 1893.
L.I.	Pt. 2	1951	21·981	Pt. 248—207	245·455	11·167	7·2081	·3279	42·7	939·	
				↗							Factory, Jan. 13, 1893.
H.I.	Pt. 3	1952	3·490	Pt. 421—418	39·390	11·287	1·1307	·3240	310·	1085·	
				↗							Factory, Jan. 13, 1893.
S.E.	Pt. 3B	1953B	7·495	Pt. 506—509	83·734	11·172	2·1868	·2918	43·9	329·	
CHORRILLOS END.											
			800·281		8937·780	11·168	260·4929	·3255	1·259	1007·6	

NOTE.—The arrowhead denotes the direction of paying out each Section.

SAN JUAN—SANTA ELENA SECTION.

VALUES AT 75° OF COMPLETED SECTION.

Type.	Section.	Factory No.	Length N.M.	Order of Coils.	C.R. at 75° F. ω Total.	C.R. at 75° F. ω Per N.M.	Capacity. Total.	Capacity. Per N.M.	D.R. at 75° F. Ω Total.	D.R. at 75° F. Ω Per N.M.	Splices.
SAN JUAN.											
S.E..................	Pt. 3B	1953B	3·432	Pt. 499—Pt. 500	38·421	11·195	1·0192	·2970	122·62	421·	·008155. Factory, Dec. 23, 1892.
H I..................	Pt. 3	1952A	4·990	Pt. 614—Pt. 463	56·055	11·232	1·6181	·3242	216·4	1080·	·004621. Factory, Dec. 23, 1892.
L.I.	Pt. 2	1951	22·323	Pt. 482—Pt. 356	250·933	11·241	7·2635	·3254	40·78	911·	·024522. "Silvertown," May 9, 1893.
L.D.S.	Pt. 10	1235	205·383	Pt. 275—Pt. 711	2295·539	11·177	67·1036	·3267	4·664	958·	·214413. Factory, Dec. 29, 1892.
L.D.S.	5	1235	416·067	6—863	4646·000	11·166	135·7479	·3263	2·491	1037·	·401445. Factory, Dec. 19, 1892.
L.D.S.	Pt. 7	1235	368·142	4—Pt. 699	4109·160	11·162	120·6460	·3277	2·9334	1079·9	·340930. "Silvertown," May 18, 1893. Bight Splice.
L.I.	Ex "Relay"	?	3·894		43·597	11·194	1·4324	·3672	90·70	356·	·011015. "Silvertown," April 16, 1893.
L.I.	Pt. 2	1951	0·978	Pt. 301—Pt. 248	10·939	11·182	0·3127	·3198	970·9	950·	·001030. Factory, Jan. 10, 1893.
H.I..................	Pt. 3	1952	1·990	Pt. 453—Pt. 453	22·266	11·188	0·6371	·3201	552·0	1098·	·001809. Factory, Jan. 10, 1893.
S.E..................	Pt. 3B	1953B	7·000	Pt. 503—Pt. 502	78·799	11.257	2·0791	·2970	55·4	388·	·018066.
SANTA ELENA.			1034·199		11551·709	11·170	337·8591	·3267	0·9749	1008·26	1·025706.

SALINA CRUZ—SAN JUAN SECTION.

VALUES AT 75° OF COMPLETED SECTION.

Type.	Section.	Factory No.	Length N.M.	Order of Coils.	C.R. at 75° F. ω Total.	C.R. Per N.M.	Capacity. Total.	Capacity. Per N.M.	D.R. at 75° F. Ω Total.	D.R. Per N.M.	Splices.
SALINA CRUZ.											
S.E.	Pt. 3B	1953B	3·923	Pt. 501—Pt. 500	43·971	11·208	1·1425	·2913	91·92	361·	Factory, Jan. 7, 1893.
H.I.	Pt. 3 Pt. 3A	1952 1952A	11·990	Pt. 459—Pt. 463	134·606	11·227	3·9054	·3257	89·38	1072·	Factory, Jan. 6, 1893.
L.I.	Pt. 2	1951	5·490	Pt. 301—Pt. 304	61·493	11·201	1·7531	·3193	157·2	865·	Factory, Jan. 5, 1893.
L.D.S.	Pt. 10	1235	106·497	Pt. 711—Pt. 482	1191·490	11·188	33·4383	·3140	8·861	944·	"Silvertown," April 29, 1893.
L.D.S.	Pt. 11	1235	74·481	Pt. 613—764	831·634	11·166	24·2658	·3258	13·275	988·7	Factory, Dec. 9, 1893.
L.D S.	9	1235	401·941	3—813	4493·333	11·179	131·7046	·3277	2·647	1063·	"Silvertown," May 6, 1893.
L.D.S.	Pt. 10	1235	54·576	Pt. 156—Pt. 291	606·870	11·120	18·1220	·3320	18·094	987·5	"Silvertown" Bight Splice, May 7, 1893.
L.I.	Pt. 2	1951	17·976	Pt. 365—Pt. 304	201·409	11·204	5·7799	·3215	42·08	756·7	Factory, Jan. 9, 1893.
H.I.	Pt. 3	1952	9·490	Pt. 459—Pt. 453	106·427	11·215	3·0467	·3210	106·3	1010·	Factory, Jan. 9, 1893.
S.E.	Pt. 3B	1953B	3·500	Pt. 501—Pt. 503	39·225	11·207	1·0361	·2960	105·9	391·	"Silvertown," April 25, 1893.
S.E.	Pt. 3B	1953B	0·050	Pt. 501	0·556	11·120	0·0147	·2814	69·30	346·5	
SAN JUAN.											
			689·914		7711·014	11·177	224·209	·3250	1·4442	996·4	

DEPTHS AND BOTTOM TEMPERATURES OVER ROUTE OF CABLES.

DEPTHS AND BOTTOM TEMPERATURES OVER ROUTE OF CABLES.

Position.	Type.	Length N.M.	Mean Depth FMS.	Mean Temperature. F. °	Position.	Type.	Length N.M.	Mean Depth FMS.	Mean Temperature. F. °
San Juan	S.E.	1·000	4½	83	Salina Cruz	S.E.	1·000	5½	79·50
	,,	1·000	12	76		,,	1·000	12	76
	,,	1·432	20	70		,,	1·923	14	74·25
	H.I.	2·000	27½	68·5		H.I.	3·000	16	73·5
	,,	2·990	35	67·25		,,	3·000	23½	69
	L.I.	5·000	50	64·5		,,	5·990	40	66·25
	,,	7·000	67½	61·75		L.I.	5·490	100	57·5
	,,	10·323	89½	59		L.D.S.	10·000	150	53·5
	L.D.S.	30·000	552	41		,,	30·000	140	54·25
	,,	70·000	1200	36		,,	66·497	315	46·2
	,,	105·383	1400	35·5		,,	74·481	700	39
	,,	200·000	1600	35·25		,,	101·941	900	37·2
	,,	216·067	1800	35		,,	200·000	900	37·2
	,,	183·142	1800	35		,,	100·000	525	41·4
	,,	100·000	1450	35·5		,,	29·576	120	56
	,,	50·000	1450	35·5		,,	25·000	91	59
	,,	25·000	1200	36		L.I.	9·976	77½	61
	,,	10·000	363	44·5		,,	8·000	60	63
	L.I.	3·894	78	60		H.I.	5·000	47½	65
	,,	0·978	28	68·5		,,	4·490	33½	67·25
	H.I.	1·990	23	66·5		S.E.	2·000	19½	71
	S.E.	4·000	14½	68·75	San Juan	,,	1·550	6	79·5
	,,	1·500	7½	71					
Sta. Elena	,,	1·500	3	72					

DEPTHS AND BOTTOM TEMPERATURES OVER ROUTE OF CABLES.

Position.	Type.	Length. N.M.	Mean Depth. FMS.	Mean Temp. F.
SANTA ELENA ..	S.E.	1·000	3	71·5°
	"	2·000	8½	70
	"	3·000	14	68·5
	H.I.	3·490	30	66
	L.I.	1·990	82	59·5
↓	L.D.S.	10·000	362	44·5
	"	20·000	1,050	36·75
	"	34·979	1,600	36·15
	"	45·000	1,550	36·15
	"	182·000	1,400	36·25
	"	34·000	1,300	36·35
	"	158·570	1,200	36·5
	"	190·000	1,000	36·85
	"	30·000	750	38·25
	"	30·000	350	44·75
	"	21·286	168	51·0
	L.I.	11·981	108	53·75
	"	6·000	70	56·0
↓	"	4·000	45	58·25
	H.I.	2·000	25	60·25
	"	1·490	17	61·5
	S.E.	3·495	14	61·75
	"	3·000	11	62·5
CHORRILLOS ..	"	1·000	4	63·5

TEMPERATURE SOUNDINGS TAKEN ALONG ROUTE OF CABLES.

TEMPERATURE SOUNDINGS TAKEN ALONG ROUTE OF CABLES.

Date.	No.	Position. Lat.	Position. Long.	Depth.	Temp. ° Fah. Max.	Temp. ° Fah. Min.	Bottom.	Remarks.
		° ′ ″	° ′ ″	fms.				
March 23	6	12 12 0 S	77 16 3 W	58	—	56·3	gn. m.	CHORRILLOS.
,, 26	10	12 16 6 S	77 34 4 W	133	70·9	54·4	gt.	
—	—	10 51 0 S	78 46 0 W	900	—	41·0	—	Surface 67° F. at Cable Buoy, Flag R.
,, 27	17	10 13 9 S	79 29 5 W	1267	—	48·6	gn. m.	
—	—	10 11 0 S	79 16 0 W	500	—	41·5	—	
—	—	9 32 0 S	79 46 0 W	451	—	43·0	—	
—	—	8 45 0 S	80 5 0 W	429	—	42·75	—	[Lat. of Chorrillos about 12° S.]
,, 28	20	8 41 3 S	80 20 8 W	872	—	48·4	stf. m.	
,, 28	25	7 3 5 S	81 8 3 W	1047	—	43·2	stf. m.	
—	—	6 29 0 S	81 5 15 W	514	—	41·5	—	
—	—	5 40 15 S	81 18 0 W	138	—	56·0	—	
—	—	5 4 0 S	81 10 15 W	23	—	61·0	—	
,, 29	29	4 30 5 S	81 37 0 W	1346	—	36·6	gn. m.	
—	—	4 26 30 S	81 25 45 W	660	—	40·0	—	
,, 29	30	4 8 8 S	81 33 3 W	1336	—	36·6	gn. m.	
,, 30	32	3 40 6 S	81 31 9 W	952	—	38·2	gn. gty. m.	
,, 30	33	3 34 5 S	81 26 9 W	917	—	39·5	gn. m.	
,, 30	35	2 55 1 S	81 28 6 W	1760	—	37·4	gn. m.	
—	—	2 43 15 S	81 13 15 W	768	—	38·0	—	
,, 31	40	2 9 7 S	81 21 8 W	1176	—	36·6	gn. m.	
,, 31	41	2 5 7 S	81 5 5 W	127	—	56·7	—	SANTA ELENA. Lat. about 2° S.
,, 23	6	—	—	58	—	56·3	—	Half-way between Ship's position when landing Shore-End, and Cable Buoy off Chorrillos.
,, 24	—	—	—	137	—	54·4	—	At Cable Buoy, Flag R, off Chorillos.
,, 24	—	—	—	460	—	—	—	Mark Buoy (cage only, no flag) No. 42.
,, 24	—	—	—	8	—	63·0	—	When landing Shore-End off Chorrillos.

	—	**12 Tr.**	**4 26 30 S**	**81 25 45 W**	**660**	**67½**	**40·0**	**sft. cl.**	Santa Elena. Lat. about 2° S.
	—	**14 Tr.**	**2 43 15 S**	**81 13 15 W**	**768**	**77½**	**38·0**	**gn. cl. m.**	
April	18	69 S T.	0 9 2 N	82 26 7 W	1631	70·8	42·1	m. & s.	Surface Temp. F. 72°·0
	—	**17 Tr.**	**0 15 0 N**	**80 34 30 W**	**364**	**77**	**58·5**	**gn. m.**	—
	—	**19 Tr.**	**1 16 30 N**	**80 3 15 W**	**628**	**80½**	**40·25**	**gn. m.**	—
	—	**21 Tr.**	**2 50 0 N**	**78 32 0 W**	**277**	**76½**	**45·0**	**s.**	—
	—	**24 Tr.**	**4 30 30 N**	**77 50 0 W**	**787**	**78½**	**38·5**	**gn. m.**	—
	—	**25 Tr.**	**5 29 0 N**	**77 42 0 W**	**1069**	**86¾**	**36·5**	**gn. m.**	—
,,	21	74 S Ta.	8 27 8 N	85 17 4 W	700	80·5	39·0	——	83°·5
,,	21	74 S Tb.	8 27 8 N	85 17 4 W	1445	78·0	35·6	gn. m.	83°·5
,,	22	76 S T.	10 41 2 N	86 36 3 W	519	78·8	41·6	gn. m.	81°·0
,,	22	77 S T.	10 46 8 N	86 28 0 W	109	78·7	57·0	gt.	81°·0
,,	22	78 S T.	11 0 0 N	86 25 0 W	100	81·6	57·1	gn. m.	80°·5
,,	25	85 S T.	11 1 6 N	86 20 2 W	92	79·5	60·7	gn. m.	79°·2
,,	26	87 S T.	11 17 6 N	87 2 6 W	256	75·2	51·6	gn. m.	81°·8

									San Juan del Sur. Lat. about 11° 30′ N.
April	27	96 S T.	12 26 5 N	89 27 6 W	1329	86·1	35·7	gn. m.	Surface Temp. F. 83°·6
,,	27	97 S T.	12 32 9 N	89 35 5 W	1352	87·8	35·6	gn. m.	85°·0
,,	30	120 S T.	15 53 2 N	95 8 3 W	48	82·8	61·0	sft. gn. m.	83°·5
,,	30	121 S T.	15 56 9 N	95 8 3 W	26	81·0	75·2	sft. gn. m.	83°·5
	—	—	——	——	9½	—	67·8	——	— Anchorage, Salina Cruz.
	—	—	——	——	8¾	—	81·0	——	— Between Ship and Shore.
	—	—	Salina Cruz Landing		—	—	—	——	83°·0 Water's edge.
	—	**27 Tr.**	**13 24 30 N**	**91 10 0 W**	**68**	**93**	**56·5**	**s.**	Salina Cruz. Lat. about 16° 20′ N.

Note.—Figures in Black Type represent Soundings taken in 1882 by S.S. "Retriever."

EXPENDITURE TABLES.

EXPENDITURE TABLES.

Tank.	Type.	Section.	Factory No.	Cut off: Splices.	Cut off: Dry end, damaged, or surplus.	Laid N.M.	Name of Section.	Length N.M.	How employed.	Original Length of Section.	Total of each Type.
Fore	S.E.	Pt. 3B	1953B	....	0·005	7·495	Chor.—S. L.	....	....	7·500	
After	,,	,,	,,	...	....	6·000	S. L. (S.)—Chor.	....	....	6·000	
Main	,,	,,	,,	....	....	7·000	S. L. (N.)—S. J.	....	....	7·000	
Main	,,	,,	,,	....	....	3·500	S. J. (N.)—S. C.	....	....	3·500	32·697
Fore	,,	,,	,,	0 005	0·013	3·923	S. C.—S. J.	....	....	4·000	
					0·009	0·050	S. J. (N.)—S. C.				
Fore	,,	,,	,,	....	0·608	3·432	S. J. (S.)—S. L.	....	....	3·500	
Main	,,	Pt. 3C	,,	....	....	....	....	1·197	Transferred to S.S. "Relay," March 21, 1893	1·197	
Fore..........	H.I.	Pt. 3	1952	0·010	....	3·490	Chor.—S. L.	....	....	3·500	
After	,,	,,	,,	0·010	....	3·490	S. L.—Chor.	....	....	3·500	
Main	,,	,,	,,	0·010	....	1·990	S. L. (N.)—S. J.	....	....	2·000	

Main	,,	,,	,,	0·010	....	9·490	S. J. (N.)—S. C.	....	....	9·500	35·500
Fore	,,	Pt. 3 / Pt. 3A	1952 / 1952A	0·010	....	11·990	S. C.—S. J.	....	....	12·000	
Fore...........	,,	Pt. 3A	1952A	0·010	....	4·990	S. J. (S.)—S. L.	....	....	5·000	
Fore...........	L.I.	Pt. 2	1951	0·010	0·005 0·004	21·981	Chor.—S. L.	....	....	22·000	
After	,,	,,	,,	0·010	....	1·990	S. L.—Chor.	....	....	2·000	
Main	,,	,,	,,	0·010 0·0095	0·0025	0·978	S.L. (N.)—S.J.	....	....	1·000	
Fore	,,	,,	,,	0·010	....	5·490	S.C.—S.J.	....	....	5·500	74·837
Main	,,	,,	,,	0·010	0·014	17·976	S.J. (N.)—S.C.	4·000	Turned over to S.S. "Relay" to replace 3·935 N.M., received April 10, 1893	22·000	
Fore	,,	,,	,,	0·014	....	*22·323	S.J. (S.)—S.L.	....	....	*22·337	

* The actual length of this Section is 0·337 N.M. in excess of the length stated to have been made, viz., 22·000 N.M.

EXPENDITURE TABLES—*contd.*

Tank.	Type.	Section.	Factory No.	Cut off		Laid N.M.	Name of Section.	Length N.M.	How employed.	Original Length of Section.	Total of each Type.
				Splices.	Dry end, damaged, or surplus.						
After	L.D.S.	Pt. 10	1235	0·014	0·007	64·979	S.L.—Chor.	....	....	65·000	
Main	"	"	"	0·009	0·015 0·006	54·576	S.C.—S.J.	....	....	260·000	
				0·011	....	205·383	S.J. (s.)—S.L.				
Fore	"	"	"	0·014 0·014	.... 0·009	106·497	S.C.—S.J.	....	....	106·534	
After	"	6	"	0·014	0·011	419·570	S.L.—Chor.	....	....	419·595	
After	"	11	"	0·010 0·014	0·017 0·011	271·286	S.L.—Chor.	....	....	345·819	2480·646
						74·481	S.C.—S.J.				
Main	"	5	"	0·014	0·013	416·067	S.J. (s.)—S.L.	....	....	416·094	
After	"	9	"	0·014 0·014	0·009 0·005	401·941	S.C.—S.J.	....	....	401·983	

Main	„	7	„	0·008 0·014	0·029 0·007	368·142	S.L.—S.J. (S.)	47·421	Balance remaining over. Spliced.	415·621
Fore	„	11A	1235B	.... 0·014	0·030 0·004	....	....	49·952		50·000
				0·3165	0·2935	2520·500		102·570	All Types—Total	2623·680
	L.I.	....	Ex "Relay"	....	0·041	3·894	S.L. (N.)—S.J.	....	Received from S.S. "Relay" April 10, 1893	3·935
				0·3165	0·3345	2524·394		102·570	Including 3·935 Ex "Relay" .... =	2627·615

COMPARISON OF TESTS ON COMPLETED SECTIONS.

COMPARISON OF TESTS ON COMPLETED SECTIONS.

	CHORRILLOS—SANTA ELENA.				SANTA ELENA—SAN JUAN.				SAN JUAN—SALINA CRUZ.			
	As Core in the 75° F. tanks.	Tests after shipment.	Tests before laying.	Tests when laid.	As Core in the 75° F. tanks.	Tests after shipment.	Tests before laying.	Tests when laid.	As Core in the 75° F. tanks.	Tests after shipment.	Tests before laying.	Tests when laid.
Date	...	Jan. 16–17	March 22–April 1	...	...	Jan. 15–16	March 31–May 12	...	...	Jan. 15–17	April 24–May 2	...
Length...	800·281	800·281	800·281	800·281	1034·199	1034·199	1034·199	1034·199	689·914	689·914	689·914	689·914
Condctr. Res.—Bridge corrected for temp. ... ... Total ω	8937·780	8402·76	8875·6	8293·0	11551·71	10874·20	11567·02	10699·6	7711·014	7251·84	7783·67	7244·6
Ditto ... ... Per N.M. ω	11·168	10·50	11·090	10·362	11·170	10·515	11·185	10·344	11·177	10·511	11·282	10·500
Capacity ... ... Total	260·493	...	...	263·29	337·86	...	...	339·33	224·21	...	...	234·06
Ditto ... ... Per N.M.	0·3255	...	...	0·329	0·3267	...	...	0·328	0·3250	...	...	0·339
D.R. 1st min.—Z, at sea, or tank temp. and pressure Total Ω	1·259	17·65	2·864	19·28*	0·9749	13·319	1·247	12·90‡	1·444	19·44	1·515	13·422§
Ditto ... ... Per N.M. Ω	1007·6	14125·0	2292·0	15480·0* 14818·0†	1008·3	13774·5	1289·7	13343·0‡ 13126·0†	996·4	13412·0	1045·2	9260·0§ 9314·0†
D.R. 1st min.—Reduced to 75° F. and atmospheric pressure ... ... Ω	,,	1499·2	1756·5	613·0	,,	1518·6	1339·6	426·0	,,	1423·5	1471·7	692·0
D.R. 1st min.—Corrected in sections for temp. and pressure ... ... Ω	,,	,,	,,	1067·0	,,	,,	,,	807·0	,,	,,	,,	1233·0
Temp., Mean.—Calculated from C.R. ... ... Fah.	...	45½	71½	39·2	...	46·0	75½	38·3	...	45½	79½	45·0
Mean Temp.—Observed ... Fah.	75° F.	...	...	38·6	75° F.	...	...	36·8	75° F.	...	...	43·6
Mean Depth.—Observed... fms.	In tank	In tank	In tank	1085·4	In tank	In tank	In tank	1489·0	In tank	In tank	In tank	596·0

* Mean of 5 tests. † Value given by Mr. Kingsford in certificate. ‡ Mean of 11 tests. § Mean of 15 tests.

HARRISON AND SONS,
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ST. MARTIN'S LANE.